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CANCER MORTALITY IN THE TEN ORIGINAL REGISTRATION STATES

TREND FOR THE PERIOD 1900-1920 *

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The progressive increase in the cancer death rates shown in the mortality statistics in practically all civilized countries has invited the serious attention of students of the public health. The more optimistic are of the opinion that these increases in the death rate may be accounted for by improvements in medical diagnosis, increase in the accuracy of vital statistics in general, greater precision in filling out death returns, changes in the age distribution of the population and similar factors.

Yet others are inclined to a gloomier view of the situation. They hold that the magnitude of the observed increases in the death rate is too great, too general in its distribution to be accounted for in any such way, so that the apparent is also an actual increase in the cancer mortality.

Because of the importance and interest of this question, it was thought well worth while to attempt a critical analysis of the course of the cancer mortality in the ten original registration states; i. e., Connecticut, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Rhode Island and Vermont. This area was chosen because it is the only one available in this country for continuous study over the selected period of twenty-one years, as the other states now forming the registration area were added from time to time to the original ten.

Moreover, these states, with the exception of Indiana and Michigan, were all situated in a similar geographic section. The population, about 19,800,000 in 1900 and more than 27,000,000 in 1920, represents about 25 per cent. of the total population of the United States, and hence is sufficiently large to give considerable mass value to the data. Besides this, the population is about as homogeneous a group as we are likely to get in a country made up of such diverse racial stocks as ours, and it exhibited about the same changes in racial composition, owing to immigration during the period of observation.

The source of the data for analysis was the published mortality statistics of the U. S. Bureau of the Census, and the decennial census reports.

The following method of study and analysis was employed:

Taking the enumerated populations of "all ages," and also for the specific age groups "under 5 years," 5-9, 10-19, 20-29, 30-39, 40-49, 50-59, 60-69, "70 years and over" as given in the U. S. census reports of 1900, 1910, 1920, the intercensal population of all ages and by specific age groups was estimated by the arithmetical method. In estimating the population, compilations were made as of January 1 instead of July 1 because of slightly greater convenience, while at the same time no sensible error in the comparative validity of the tables was introduced. Since specific age groups were dealt with, the population of unknown age was omitted from the estimated figures.

General cancer death rates and specific death rates were then computed, first, for all forms of cancer and then for cancer by the seat of organ affected, the international classification [1] being used. In the case of cancer of the breast and cancer of the female genital organs, rates were computed on the basis of the estimated female population, as cancer of the breast is almost wholly, and cancer of the female genital organs exclusively, confined to that sex.

The extent of death certification by medical men, the changes and improvements in the practice of death certification and in diagnosis, the corrections to be applied for changing age distribution, and finally changes in racial stock due to immigration and the effects of these factors on the mortality rates were each considered in their turn. The results of this analysis and interpretation of the data are now in the process of publication. They are entirely too long to be given in extenso here. However, by using a somewhat different method of age grouping, the main results of the inquiry, their interpretation, and the resulting conclusions may be briefly presented.

The population aged 40 years and over is the important age group, so far as cancer mortality is concerned. In 1900, in the states under consideration, this age group furnished about 89.8 per cent., and in 1920 about 92.5 per cent. of all the cancer deaths.

The population 40 years and over of the ten original registration states was 5,313,459 in 1900; in 1920, 8,145,709. It had the age distribution given in Table 1.

From this age distribution the somewhat unexpected fact is noted that, in spite of the increase in the median

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. In the international classification of causes of death, cancers are thus divided: The general rubric is: "cancer and other malignant tumors" which, in turn, is subdivided into: (1) cancer of the buccal cavity; (2) cancer of the stomach and liver; (3) cancer of the peritoneum, intestines and rectum; (4) cancer of the female genital organs; (5) cancer of the breast; (6) cancer of the skin; (7) cancer of other organs or of organs not specified. It should be noted that this classification was not quite uniform for the twenty-one years. Thus, prior to 1910 we find the rubrics "cancer of the mouth" and "cancer of the intestines" in the place of "cancer of the buccal cavity" and "cancer of the peritoneum, intestines and rectum." These differences in classification may have had some effect on the figures, though this was probably small.

age of the general population that has taken place since 1900, in the population aged 40 years and over, the proportion of elderly persons 60 years and over was greater in 1900 than it was in 1920 (29.17 and 28.14 per cent., respectively). If we redistribute the 1920 population of 40 years and over according to the 1900 percentage composition and apply the appropriate 1920 cancer death rates to each of the resulting age groups, it is found that, instead of the 25,368 that were reported for this section of the population, 25,806 deaths would have occurred. This corresponds to a rate of 316.8 per hundred thousand, or 5.4 points higher than the observed 1920 rate of 311.4.

TABLE 1.—*Age Distribution of Ten Original Registration States*

Age Group	1900 Population	1900 Per Cent.	1920 Population	1920 Per Cent.
40-49	2,228,723	41.94	3,421,204	42.00
50-59	1,584,625	28.88	2,431,602	29.85
60-69	963,991	18.14	1,456,490	17.84
70	586,120	11.08	839,413	10.30
	5,313,459	99.99	8,145,709	99.99

From this it follows that the cancer death rates in this group of the population may be compared for the period of 1900-1920 without the necessity of introducing any correction for a changing age distribution, as any correction for this factor would have the effect of slightly increasing instead of lowering the rates of the later years of the period.

Therefore, we arrive immediately at the conclusion that any increases observed in the cancer deaths of this group of the population are independent of changes that may have taken place in the age distribution.

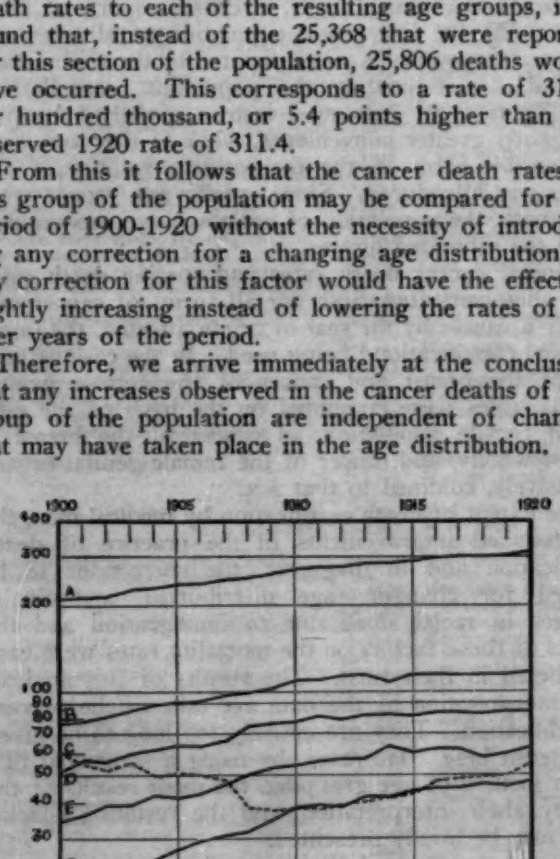

Chart 1.—Death rate, per hundred thousand of population, from all forms of cancer and by site of organ affected, in age group 40 years and over, in the registration states of 1900 for the period 1900-1920: *A*, cancer, all forms; *B*, stomach and liver; *C*, other organs or organs not specified; *D*, female genital organs; *E*, female breast; *F*, peritoneum, intestine and rectum; *G*, skin; *H*, buccal cavity.

Chart 1 and Table 2 show the changes that have occurred in the death rates from cancer of all forms, and by site of the organ affected in the population 40 years and over, the rates for cancer of the breast and cancer of the female genital organs being based on the female population 40 years and over, which has practically the same age distribution as that of the male.

From this chart and table it is obvious that pronounced increases have taken place in the death rate from cancer of all forms, and in nearly all the cancers of the different organ seats, the only exception being the rubric "other organs or organs not specified," of which more will be said later.

Comparing the initial and the final rates, the percentage increases given in Table 3 are observed. It is apparent that with the exception of cancers of the skin and cancers of other organs or organs not specified, the increases have been pronounced and striking. Cancers of the peritoneum, intestines and rectum have shown the greatest advance, the percentage increase over the 1900 rate being 148.4. Cancers of the skin, on the other hand, as shown by the chart, have shown no increase in the rate since about 1909, while the curve for other organs or organs not specified is different from that for other varieties of cancer in that the curve shows a pronounced downward concavity.

TABLE 2.—*Death Rate from Cancer* *

Year	Cancer, All Forms	Buccal Cavity	Stomach and Liver	Peritoneum, Intestine and Rectum	Female† Genital Organs	Breast†	Skin	Other or Unspecified Organs
1900	212.0	5.80	77.1	19.0	51.0	34.4	7.36	60.75
1901	218.1	6.13	78.1	22.7	56.7	36.6	8.59	55.4
1902	217.4	6.0	80.6	23.69	55.9	39.5	8.06	51.65
1903	227.9	6.84	85.0	22.95	60.4	39.5	8.79	54.85
1904	232.2	7.25	89.2	25.03	61.9	42.3	8.98	50.4
1905	238.6	8.06	90.8	27.48	63.6	41.2	9.13	51.4
1906	240.0	8.11	91.6	29.2	62.6	42.7	8.79	50.3
1907	248.5	8.95	95.2	30.91	65.8	46.6	9.95	47.45
1908	251.0	9.14	99.3	31.44	74.5	50.1	10.91	38.6
1909	259.0	10.08	102.1	34.9	75.7	53.0	11.0	37.37
1910	270.8	10.4	109.0	38.28	77.8	54.2	9.46	38.61
1911	273.8	11.35	107.5	39.5	80.7	55.9	9.81	38.12
1912	278.0	10.82	112.5	38.49	78.8	57.2	10.07	38.91
1913	290.0	10.98	114.0	42.2	82.2	56.5	9.69	40.5
1914	296.0	12.24	107.0	41.98	88.1	64.0	10.19	42.11
1915	296.2	11.51	114.5	44.38	81.2	59.8	9.81	43.45
1916	300.0	10.54	115.1	44.96	83.6	61.6	10.47	47.21
1917	301.4	11.25	114.1	45.0	84.3	62.0	10.13	48.55
1918	290.7	10.74	113.6	46.95	82.6	58.8	9.57	49.03
1919	302.3	11.25	114.1	45.45	84.4	59.5	10.11	50.2
1920	311.4	11.18	116.2	47.2	84.0	62.8	9.38	54.9

* The rate given is that for each hundred thousand of population, aged 40 years and over, all forms and by site of organ affected, in the ten registration states of 1900, for the period 1900-1920.
† These rates figured on women, aged 40 and over.

As explained by the Census Bureau, the form of this curve is undoubtedly due to increased precision in stating the site of the malignant growth on the death certificate, the fuller information resulting from the efforts of the Census Bureau and local registrars to improve death registration, permitting the assignment of a larger proportion of cancers to the proper seat of the disease.

Reference to the curve, however, shows us that apparently this gain in accuracy, which produced a striking drop in the mortality rate under this rubric in the period 1900-1909, became stabilized at about that time, as the curve for this classification of cancer shows a steady rise, the percentage increase in the rate from 1910 (the low point) to 1920 being 47 per cent. Since the precision of death certification was presumably as great in 1920 as in 1910, this rise in the death rate curve from that year must be due to an increase in the reported number of deaths of persons 40 years and over from cancers of this class. The types of cancer classified by the Census Bureau under the rubric "cancer of other organs or organs not specified" are cancer of the larynx, lungs and pleura, pancreas, kidneys and suprarenals, prostate, bladder, brain, bones (except jaw), testes, and others of this class.

On the face of things, in the population 40 years and over, and independent of any change in age distribution there has been a pronounced increase in all forms of cancer, and of cancer of nearly all the specified sites. Before accepting this as an actual increase in the cancer mortality, however, we should subject these data to some interpretation.

The validity of mortality returns are, of course, importantly affected by the extent to which causes of death are reported by members of the medical profession and not by laymen, as is too often permitted.

However, so far as the states in question are concerned, inquiry showed that practically 100 per cent. of death returns, for the period under consideration, were signed by duly licensed physicians, and, consequently, the diagnostic error was that inherent in the diagnoses of the medical profession in general, uncomplicated by errors due to the reporting of deaths by laymen.

Statistically, therefore, the mortality statistics of the ten original registration states have a high degree of validity, and from this standpoint are much more reliable than those of certain foreign countries that permit laymen to certify to causes of death.

As Willcox points out, another factor that may alter the reliability of death returns is the extent of available medical services. In regions where physicians are scarce, the death returns are less trustworthy than where they are plentiful.

From this standpoint, however, the ten states considered have little to be desired. In 1906, the total number of physicians in these states was 33,127, a ratio to the population of 1:666. In 1921, this number was 39,389, a ratio of 1:708.

From this it is evident that in these registration states the ratio of medical men to the general population is very high, more than twice as high, for instance, as in England or in Germany. This betokens a high degree of availability of medical services for diagnosis and treatment of the sick. Moreover, we could not ascribe part of the observed increase in the cancer death rates

TABLE 3.—*Percentage Increases in Death Rate from Cancer of All Forms*

	Death Rate per 100,000		Per Cent. Increase
	1900	1920	
Cancer, all forms	212.0	311.4	46.9
Buccal cavity	5.5	11.18	103.4
Stomach and liver	77.1	116.2	50.7
Peritoneum, intestines and rectum	19.0	47.2	148.4
Female genital organs*	51.0	84.0	64.7
Breast*	34.4	62.9	82.6
Skin	7.36	9.38	27.4
Other organs or organs not specified	60.75	54.9	9.6 decrease

* Female population 40 years and over.

to increase in the availability of medical services, as the ratio of physicians to the general population was slightly greater during the early years of the period of observation than it was later.

Consequently, since no correction resulting either from lack of medical certification or available medical services need be applied to these rates, the remaining elements that should be examined for trustworthiness, and suitably corrected if need be, consist in allowances that should be made for improvements in the precision and accuracy in returning causes of death, progress in medical diagnosis, and the influence on the cancer death rate due to the changes wrought in the racial stock by immigration.

Even casual examination of the mortality returns over a series of years shows that a pronounced change in the direction of greater precision and detail in the filling out of death certificates must have taken place. An important improvement in this direction is demonstrated, as pointed out by Willcox, by Howard and by others, but the great changes that have taken place in

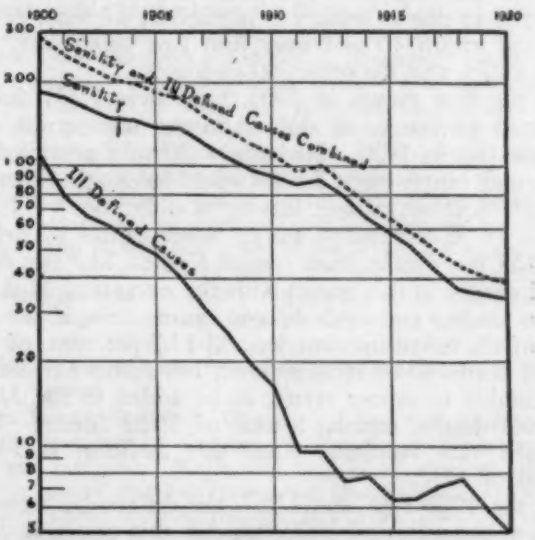

Chart 2.—Death rate, per hundred thousand of population, from senility, ill defined causes and the combined rate, in age group 40 years and over, in the registration states of 1900 for the period 1900-1920.

the deaths reported in this age group are due to "indefinite" causes and to senility. This is well shown in Chart 2.

While the general death rate in persons 40 years and over has shown but little change during the period of observation, this chart shows that the death rate from "ill defined" causes fell during the twenty-one year period from 108 to 5, a decrease of more than 95 per cent. In similar fashion, the mortality rate from senility declined from 185.0 in 1900 to 34.1 in 1920, a decrease of nearly 82 per cent.

The drop in the combined death rate from these causes has been from 293 in 1900 to 39.1 in 1920, a decrease of nearly 87 per cent.

Since there has been no significant change during the period of observation in the general death rate of persons 40 years and over, the great reduction in the death rates from indefinite causes and senility must have been effected by a gradual redistribution of deaths formerly reported under these rubrics to other more precise classifications.

The observed reduction in the reported deaths from these causes is thus good testimony to increasing accuracy and precision in death certification. If the 1920 rate for deaths from ill defined causes and for senility had prevailed in 1900, instead of the 15,568 deaths reported under these rubrics, only 2,077 deaths would have been attributed to these causes in the population 40 years and over. For that year, this would leave 13,491 deaths to be redistributed among other more precise classifications. Here, then, is a source of excess deaths which, if all assigned to cancer, would much more than obliterate any advances in the cancer death rate.

Of course, there is no justification for any such extreme correction of the cancer death rate, as besides cancer, other diseases, such as diseases of the circulatory system, have shown even more dramatic increases

than cancer in this age group. However, we must assume that a certain proportion of the deaths certified to formerly as due to ill defined causes and to "old age" were in reality due to cancer. It is of interest to see what adjustment must be made in the cancer death rate if we assign a fair proportion of these deaths to the cancer classification.

Since the number of deaths in persons under 60 reported as due to senility is negligible, we must divide our age group 40 and over into two subgroups, one aged 40-59, and the other, 60 and over.

In the first group, in 1900 there were 1,331 deaths reported as due to ill defined causes and senility, as against 152 in 1920. Had the 1920 rate prevailed in 1900, only ninety-eight deaths would have been reported as due to these causes, leaving a difference of 1,233 deaths to be distributed among other causes of death. In 1920, the deaths from cancer formed 13.7 per cent. of all deaths in this group with the exception of those due to senility and to ill defined causes. So, if for the sake of liberal adjustment we add 13.7 per cent. of the excess deaths to be redistributed, 169 additional deaths attributable to cancer result, to be added to the 5,043 reported deaths, making a total of 5,212 deaths. The adjusted rate resulting from this addition is 138.5 instead of 134.

As the 1920 rate was 176.7, the difference between this and the adjusted 1900 rate for this group is 38.2 instead of 42.7 points. Since 38.2 is about 89.5 per cent. of 42.7, a little more than 10 per cent. of the increase in the cancer death rate in this group may be ascribed to greater precision in certifying causes of death.

Treating the age group 60 and over in similar fashion, we find that in 1900, 14,237 deaths were reported as due to senility and to ill defined causes. Substituting the 1920 rate of 13.2, only 3,033 deaths would have resulted, leaving 12,188 deaths to be reassigned under more definite classifications. Since, in 1920, 10.6 per cent. of all deaths in this age group (except those due to senility and to ill defined causes) were due to cancer, 10.6 per cent. of 12,188 gives 1,292 deaths to be added to the 6,220 reported cancer deaths. This gives an adjusted rate of 484.6, as compared with the observed rate of 401.3. The differences between the reported and adjusted 1900 rate and the 1920 rate are 253.9 and 170.6, respectively, corresponding to percentage increases of 63.3 and 35.2.

Since 170.6 is about 67 per cent. of 253.9, 33 per cent. of the observed increase could be explained by transfer to the cancer column of deaths in which the cause was erroneously reported as due to senility or other ill defined causes.

In making this correction, it has been assumed that the excess deaths are assigned to other causes in the proportion these have to the total deaths from all causes in each age group, the 1920 percentage of cancer, the highest observed, being used in this case.

Willcox believes that this method of correction tends to underestimate rather than overestimate the transfer, since the modern tendency is away from vague and indefinite to specific and definite causes of death. Hence, he believes that there has been a greater tendency to certify cancer, with the increase in precision of death certification, than would be indicated by its chance frequency as a cause of death.

It is believed, however, that the method of correction is liberal for the following reasons: In the first place, the 1920 percentage that cancer formed of all deaths is used, thus representing the more nearly stabilized practices of present day death certification. The circumstance is ignored that, if cancer has actually increased, there would naturally be today a higher percentage of cancer among all deaths than formerly.

Again, we include in the cancer deaths a large number of deaths due to cancer of accessible sites, such as the buccal cavity, breast, female genital organs and skin, about which, as is conceded, errors, so far as death certification is concerned, hardly ever occur. In fact, with regard to such types of cancer, it may be concluded that throughout the entire period of observation the tendency to report a vague and indefinite, rather than a specific, cause of death was negligible as compared to other varieties of cancer, and very much less than for other causes of death, such as organic diseases of the heart.

There is still another correction that must be discussed. While the cancer death rate has been increasing, that due to nonmalignant tumors has been falling. In 1900, the rate was a little over 12 per hundred thousand for persons 40 years and over, while in 1920 it was but 7.9. Had the latter rate prevailed in 1900, only 420 instead of 646 deaths would have occurred. This gives a difference of 226 deaths reported as nonmalignant but which, presumably, were due to cancer.

Let us now review briefly how matters stand as to the various adjustments that should be made in this group.

TABLE 4.—*Redistribution*

Age Group	Transfers to Cancer From	Deaths
40-59 years	"Ill defined" deaths	169
60—	"Ill defined" deaths and senility	1,292
40 years—	Nonmalignant to malignant tumors	226
		1,687

In regard to changing age distribution, it has already been pointed out that if the population aged 40 and over were redistributed according to the age constitution prevailing in 1900, the 1920 rate of 311.4 should be somewhat increased to 316.8. This rate is greater than the observed rate of 212.0 in 1900 by 49.5 per cent. In 1900 there were reported 11,263 cancer deaths in this group. As a result of the previous computations, the number of deaths given in Table 4 should be added to this figure.

This total, added to the 11,263 already reported, gives 12,950 deaths. This yields a death rate per hundred thousand of 243.9, 31.9 points higher than the observed rate of 212.0.

This adjusted rate is less than the 1920 rate adjusted for change in age distribution of 316.8 by 72.9 points. This corresponds to an increase of 29.9 instead of 49.5 per cent. As 72.9 is about 69.5 per cent. of 104.8 (the difference between the 1920 adjusted and the 1900 observed rate), a little more than 30 per cent. of the increase in this age group could be attributed to greater precision and more accuracy in returning the causes of death.

One aspect that must be considered in connection with the increase in cancer mortality is the extent to which general improvement in diagnostic skill may have contributed to such increase. It must, however, be borne in mind that here we are dealing, not with improvement in the early diagnosis of cancer, when there is still hope of arresting the disease, but with the diagnosis of cancer in its terminal stages.

From this standpoint, and especially in the recognition of cancers of the accessible sites, such as the buccal cavity, the breast and the female genital organs, it is doubtful whether the physicians of 1900 were much, if at all, inferior to their brethren of today.

Yet the death rates of some of these cancers of accessible sites, such as the buccal cavity, the breast and the uterus, show a higher percentage increase than that of an inaccessible site, such as cancer of the stomach and liver.

This is shown by the following percentage increase in the rates: cancer of the buccal cavity, 103.4 per cent.; cancer of the uterus, 64.7 per cent.; cancer of the breast, 82.6 per cent.; cancer of the stomach and liver, 50.7 per cent.

It is true that the disproportionate increase in the death rate from cancer of the peritoneum, intestine and rectum would indicate some improvement in the diagnosis of these types of cancer. This evidence is somewhat weakened by the failure of skin cancer to advance since about 1910.

While no completely satisfactory explanation is at hand, we may suppose here that the superficial situation, generally lower malignancy, greater amenability both to surgical removal and to radiotherapy, and the much higher average age at death may be cited as factors that would explain the failure of skin cancers to advance *pari passu* with the other varieties.

Before concluding, let me refer briefly to one other point. This is the probable effect on the cancer death rate of the changes in racial stock effected by immigration during this period. It is well known that the character of immigration has been changing. Formerly, immigrants originated mainly from northern and western Europe. Now they come mainly from southern and eastern Europe. The races contributing to the "old" immigration have been the English, Celtic, Teutonic and Scandinavian. The predominant racial stocks in the "new" immigration are Italian and Slavic.

Since the reported cancer death rates in the latter stocks, so far as statistics are available, seem lower, and certainly are no higher than in the racial stock that originated the old immigration, we may assume that the changes in racial stock due to immigration had, if anything, a tendency to lower rather than to raise the prevailing cancer death rates.

CONCLUSIONS

1. There has been a pronounced increase in the observed death rate from cancer in persons 40 years and over in that part of the United States known as the ten original registration states.

2. Part of this increase (about 30 per cent.) is due to greater precision and accuracy in the filling out of death returns.

3. The remainder, however, is an actual increase in the mortality resulting in a death rate between 25 and 30 per cent. higher than it was twenty-one years ago.

ABSTRACT OF DISCUSSION

FREDERICK L. HOFFMAN, Newark, N. J.: For many years cancer has been on the increase, and no arguments against this conclusion have stood the test of qualified analysis. Unquestionably, the data are always more or less defective in matters of degree, but this argument can be made against statistics of every nature. When we commenced our agitation in favor of cancer control, the actual recorded mortality from cancer was 75,000, whereas at present it is 110,000. The terminal diagnosis in cancer, at least of the external organs and parts, was probably as good thirty years ago as it is now. Physicians of the past generation were much better observers in matters of detail than physicians of today, who place too much reliance on instruments of precision, tests or mechanical examinations, which cannot properly replace the trained eye, ear and hands. I have little patience with the argument that the physicians of the past were ignorant of obvious cancer occurrences terminating in death in a suffcient number of cases to impair seriously the statistics of the past. Cancer, in brief, and as shown by Dr. Schereschewsky, is unquestionably seriously on the increase. Last year the rate for American cities was the highest on record, while for certain cities the rates are decidedly alarming; but the root of the matter will not be effectively dealt with until the rate is broken up into its component parts and we deal separately with the different forms and types of cancer that affect the human body. The cancer problem is unquestionably the greatest problem before the medical profession at the present time. It will certainly not be solved by those who spend their time in hair-splitting arguments, chiefly for the purpose of controversy, rather than in aid of the search for cancer facts. The statistical aspects of the cancer problem are extremely complex, burdensome, costly and always difficult, but the outstanding results of statistical research are unquestionably useful contributions to cancer knowledge and aid in the search for a better understanding of the true nature of malignant diseases.

DR. FRANK SMITHIES, Chicago: I am very glad to hear Dr. Schereschewsky discount the remarks of Wells made in Chicago last year. Wells said to a large audience that the reason cancer was increasing was that, through our efforts toward public health, we are increasing the life of the individual, and, in doing this beneficent thing, we were bringing into the cancer class a great many individuals who otherwise would have died from other causes and who would not have reached the cancer age. I think Dr. Schereschewsky's figures prove that Wells was entirely wrong. I can only speak of cancer of the stomach. I have made an analysis on the greatest number of proved instances of cancer of the stomach (921 operatively demonstrated cases). It is interesting to observe that my figures regarding the "hereditary" incidence of cancer as secured by inquiry from patients, and going back only as far as four generations in any family, was 8.5 per cent. This corresponds within 0.5 per cent. of the incidence of spontaneously arising cancers in mice as shown by Maud Slye. I wonder whether any observations have been made by statisticians respecting the total increase in the population of the world with regard to cancer, particularly with respect to the increase of civilized peoples in the world and the increase of cancer incidence. Cancer apparently is a disease of higher civilization; and since gradually the world is accumulating a greater civilized population, possibly it is true that the figures for cancer increase are only keeping pace with the increase in civilized population. This has always appeared to me as interesting, because, as civilized people live faster, eat more, exercise more and are subject to more trauma than uncivilized folk, their organs are put to a greater stress in shorter time than are the organs in less civilized people. They are functionally put to a stress earlier in life and to a greater stress over the period of middle life than individuals not civilized. Their organs earlier reach functional or anatomic senescence. The decrease in skin cancer might be accounted for, perhaps, because during the last two decades a large emigrant population has learned how to keep itself clean. Very likely increased bathing and use of soap and better care of the skin and surfaces of the body have some effect in reducing irritation and thus reducing the incidence of skin carcinoma.

PROF. I. V. HISCOCK, New Haven, Conn.: Dr. Schereschewsky has rendered an important contribution to cancer literature. Two years I studied with Dr. Dublin the trend of cancer mortality in a large group of industrial wage earners of the United States and Canada (129 million years of life exposed to risk), for the years 1911-1922. In general, these figures bear out some of the important findings which Dr. Schereschewsky has elaborated today. It is most illuminating when one divides the causes of cancer deaths into the various groups and studies the course of mortality according to

factors of age, sex, race, etc. The greatest increase for this industrial group has occurred among the males, and at the older age periods as Dr. Schereschewsky has found for the general population. One of the largest increases is noted from cancers of the peritoneum, intestines and rectum. Cancer of the skin showed a very slight decrease, if anything, while deaths from cancer of the breast showed only very slight increases. A fairly recent note in the *Statistical Bulletin*, Metropolitan Life Insurance Company, calls attention to the importance of the cancers that occurred among the younger people, and I think this group of cancers, as well as those of "other organs and parts not specified," might be studied a great deal more extensively than we have in the past. This could be accomplished by subdividing the cancers of the various organs and parts covered by this important residual group into separate units, for statistical study.

DR. J. W. SCHERESCHEWSKY, Boston: The question of the hereditary factor in cancer is, of course, one of great importance. Because of the lack of available data it is not possible at present for any one, so far as I know, to make a thoroughgoing study of this factor in the human race. The hereditary studies that are found in the literature are not sufficiently extensive to give mass value or to exclude the operation of the laws of chance. So far as laboratory observations are concerned, the influence of the hereditary factor appears to be pronounced. In conformity with the experience of Mr. Hoffman and others, the results of this study, which was entered on in an unbiased way, show that the increase in cancer mortality is an actuality. Since this increase is here we must look to factors in our complex civilization which have brought about this great increase in cancer mortality. This means that we must redouble our assiduity along epidemiologic lines with the hope that tomorrow or next year or in the next decade, the solution of the baffling etiology of cancer will be within our grasp. I cannot believe that this increase in cancer mortality is going to continue indefinitely. Like all biologic phenomena, these processes tend to reach a state of equilibrium sooner or later. After the forces that have raised the human race to a new and higher level of susceptibility have spent themselves, I expect to see no further great increase in the cancer death rate.

SCARLET FEVER

ETIOLOGY, PREVENTION BY IMMUNIZATION, AND ANTITOXIC TREATMENT *

WILLIAM H. PARK, M.D.
NEW YORK

The etiology of scarlet fever has been under active investigation for many years. Loeffler,[1] in 1884, and later other bacteriologists noted that the hemolytic streptococci were very abundant in the throats of acutely ill scarlet fever patients. Clinicians also noted the fact that in certain cases of wound infection and puerperal fever a scarlet fever-like rash developed. These observations led to the opinion that there was a close relationship between certain strains of hemolytic streptococci and scarlet fever. The majority, however, held that the hemolytic streptococci were merely very important secondary invaders. Repeated attempts by numerous investigators to produce any disease similar to scarlet fever in animals by the inoculation of throat secretion or cultures of hemolytic streptococci obtained from the throats of scarlet fever patients failed. It was therefore necessary to turn to tests on man.

Moser [2] reasoned that, if the streptococcus was the cause of scarlet fever, a curative serum might be produced, and in 1902 published a report of the good therapeutic results obtained by the use of an antiscarlet fever serum produced by the horse after frequently repeated injections had been made of living streptococci together with the broth in which they had developed, so as to get the antigenic value of the organisms as well as of any toxins that might have developed in the broth. The stains of streptococcus used were obtained from a number of toxic cases of scarlet fever.

A Russian investigator, Savchenko,[3] went a step further; he showed, in 1905, that the serum contained both scarlet fever antitoxin and streptococcic bactericidal bodies. He also proved that the filtered broth in which the culture had grown contained a strong toxin. He said:

> Immunizing with the microbes only, it is possible to obtain a very active antimicrobal serum, but not at all antitoxic; vice versa, by immunizing with a toxin, we obtain an antitoxic serum and, therefore, one not acting on the microbes.
>
> In scarlet fever, in which we have severe local infections and at times even general infections, together with the toxemia, we must have in the serum antitoxins as well as germicidal antibodies. Filtrates of our own cultures of streptococci from scarlet fever grown in different combinations of broth proved to be nonpathogenic for rabbits, even in large doses. To conclude from this that there is no poison in the medium would be just as erroneous as to infer that there is no tetanus toxin after we had tried it on chickens, which are insusceptible to it.
>
> It is obvious that cultures grown on 2 per cent. ascitic broth are preferable for toxin production to those grown on sugar broth, even if the organisms are less luxuriant.
>
> The same filtrate, injected under the skin of rabbits in amounts of 5 and even 10 c.c., produced no symptoms except a slight swelling. The filtrate turned out to be just as harmless for other laboratory animals.
>
> These experiments showed that it is possible to obtain a sufficiently strong toxin, but they unfortunately also showed that by means of our laboratory animals it is impossible to gage either the amount of toxin—which is so important for proper immunization—or the amount of antitoxic substances in the serum, which is not less important for curative purposes. For the time being we are compelled to work, so to speak, by "feeling" our way.
>
> As long as the broth cultures were shown to contain toxin, it appeared most proper to immunize horses with living cultures with the accompanying toxic broth, because in this way both antitoxic and antimicrobal substances should be obtained.

After reading the paper of Savchenko, no one can doubt that he produced by the filtrate a true antitoxic serum.

HUMAN IMMUNIZATION AGAINST SCARLET FEVER AND VALUE OF THIS EVIDENCE IN FAVOR OF THE CAUSAL RELATIONSHIP OF STRAINS OF STREPTOCOCCI TO SCARLET FEVER

Gabritschewsky [4] had finished an experimental study on a streptococcic infection of horses in which an appreciable rash developed, and believed he had proved that a vaccine of toxin and dead streptococci was able to develop a moderate degree of immunity. He then turned to the question of utilizing a streptococcus vaccine made from the toxin and the cells of streptococci obtained from scarlet fever. His vaccine was made of bouillon in which the streptococci had grown for four days plus the streptococci themselves. The toxic bouil-

* This study of scarlet fever was aided by a grant of money from the Milbank Memorial Foundation.

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Loeffler: Arb. a. d. k. Gesundh., 1884.

2. Moser: Wien. klin. Wchnschr. **15**: 1053, 1902.

3. Savchenko: Russk. Vrach, 1905, No. 25, p. 797.

4. Gabritschewsky: Centralbl. f. Bakteriol. I, Orig. **41**; Berl. klin. Wchnschr. **44**: 556 (May 6) 1907.

lon containing 3 per cent. by volume of the streptococci was heated to 60 C. to kill the streptococci, and then preserved with 0.5 per cent. phenol (carbolic acid). Three doses were given subcutaneously one week apart. For infants under 2 years the dose was 0.25 c.c.; for children between 2 and 10 years, 0.5 c.c., and for those over 10 years, 1 c.c. The results in children were most important. Langowoi, using his vaccine, found that of 120 children inoculated, 13.3 per cent. developed a fine scarlet fever-like exanthem which was not followed by desquamation. A few developed a sore throat and strawberry tongue, and fewer still vomiting. He states that these symptoms are those which are characteristic of scarlet fever, and these results of the vaccination add an extremely important proof "for the specificity of a scarlet fever streptococcus and its toxin." There is no question that Gabritschewsky considered the bouillon to contain a true toxin, not only from his language, but also because he was in contact with Savchenko, and their articles appear together a little later in the same Russian journal. He found that the second and third injections, although they were twice and four times as large as the first, rarely produced a rash. This he considered as evidence of the rapid development of immunity.

Gabritschewsky,[4] in 1907, gives further evidence in favor of vaccination. Of 248 children receiving injections of the vaccine, Nikitin noted the rash in 17.3 per cent. In six he noted a generalized rash, vomiting, a strawberry tongue and an angina. In seven cases, the lymph glands were slightly swollen; in ten cases, albumin appeared in the urine for a day. In one case there was an acute nephritis, which ended in recovery. Twenty-six children who had previously had scarlet fever showed either no reaction or only a slight local swelling. A group of children tested during their fourth week of convalescence showed a greater percentage of reactions than those who had been convalescent for a long time. At Gabritschewsky's suggestion, Langowoi vaccinated twenty children with a vaccine made in the same way as the scarlet fever vaccine from the streptococcus of erysipelas. None of these developed a rash. These cases are too few to prove that the result would have been the same if a larger number had been vaccinated, but they are suggestive of the specific character of the scarlet fever toxin. Gabritschewsky closes his article with five conclusions, of which I quote the last two:

> The fact that a scarlet streptococcus vaccine (toxin and culture) is able to produce a scarlatiniform rash and the other symptoms of scarlet fever is a decisive proof in favor of accepting a streptococcus as the specific cause of scarlet fever.
>
> This decisive proof adds a scientific reason for the use of Moser's serum and my vaccine.

Gabritschewsky's death prevented him from following up the practical results of his vaccine. The following statement by Polotevkova[5] is one of several encouraging reports:

> A severe outbreak of scarlet fever took place in my district, with 1,200 cases of the disease. Not only children, but also adults between 20 and 50 years of age were among the sick. The form of the disease was also severe, very often involving suppurative affections of the mouth, nose and upper respiratory tract. Owing to the extreme poverty of the peasants of this district, where very often milk could not be obtained for the sick, the only hope was in the preventive immunization. In short, the results were such that in the villages in which vaccination took place only one or two or no cases at all were observed; in villages in which no vaccination was carried on, the number of sick would reach from six to 175 cases. The author vaccinated her own three children.

5. Polotevkova: Russk. Vrach **11**: 1183, 1921.

Gabritschewsky considered that he had added to the proof already gathered sufficient evidence so that scarlet fever could be considered to be in the same class as diphtheria. The scarlet fever streptococcus produced its toxins in the throat. The absorbed toxins produced the rash, the fever and the other symptoms due to toxemia. The lowered resistance allowed the scarlet fever streptococci or other streptococci to invade distant parts and make the so-called complications. Additional evidence of the causal relationship was the development of a case of scarlet fever by the accidental inoculation in our laboratory of the throat of one of the assistants by a culture of several strains of streptococci including a scarlet fever strain. A typical case[6] of scarlet fever developed, but attempts to reproduce the disease in animals with the culture failed.

In 1918, Schultz and Charlton[7] described the reaction known by their name. When 1 c.c. of a diluted convalescent serum is injected intracutaneously into the reddened skin of a scarlet fever patient, a blanching occurs in an area several centimeters in diameter. In December, 1923, Mair[8] published further results and concluded that this reaction is due to the action of an antitoxin on the scarlet fever specific toxin. This brings us to the discoveries of the Dicks and of Dochez. In spite of the proof, which was largely unknown to most workers, the majority still believed that the hemolytic streptococcus found in scarlet fever was only an important complicating infection. In October, 1923, the Dicks[9] inoculated five volunteers who had lived in the country, with a streptococcus culture from a case of scarlet fever. One developed a typical case of moderate scarlet fever. The throats of five others were inoculated with the filtrate of a broth culture. None of these developed the disease, but when the same persons were inoculated with the streptococcus, one developed it. This proved that the infection agent was not a filtrable virus attached to the streptococci. It was found by them that the streptococci isolated by them from scarlet fever differed from one another in the ability to ferment mannite. The first two cases had been caused by an organism that fermented mannite. The Dicks then tried out the effect in the human skin of the toxin discovered by Gabritschewsky and Savchenko. They found that weak solutions of the toxin may be employed in skin tests to determine suscepti-

TABLE 1.—*The Dick Test at Different Age Groups (Zingher)*

Age	Total Tested	Per Cent. Dick Positive
0- 6 months	29	44.8
6-12 months	52	65.3
1- 2 years	233	71.6
2- 3 years	204	64.2
3- 4 years	241	60.5
4- 5 years	204	48.4
5-10 years	1,955	33.6
10-15 years	2,905	22.8
15-20 years	981	16.8
20 years up	776	14.4
Total	7,700	29.2

6. Krumwiede, Charles, Jr.: Nicoll, Matthias, Jr., and Pratt, Josephine S.: Attempts to Produce Scarlatina in Monkeys, Arch. Int. Med. **13**: 909-912 (June) 1914.
7. Schultz and Charlton: Ztschr. f. Kinderh. **17**: 328, 1918.
8. Mair, W.: Lancet **2**: 1390 (Dec. 29) 1923.
9. Dick, G. F., and Dick, Gladys H.: Experimental Scarlet Fever, J. A. M. A. **81**: 1166 (Oct. 6) 1923.

bility to scarlet fever. The toxin is first carefully standardized and diluted so that 0.1 c.c. represents a skin test dose. The test consists of an intradermal injection of exactly 0.1 c.c. of the skin test dilution on the flexor surface of the forearm. The reaction is observed at the end of twenty-four hours. An area of

TABLE 3.—*Immunizing Results of Three Injections of 300, 500 and 1,000 Skin Test Doses of Scarlet Fever Toxin Given at Intervals of One Week*

	Results of Retest	
Before Injection Reaction to Dick Test	Two Weeks After Last Injection	Four Weeks After First Injection
10 + + or + +[1] (Strong reactors)	2 = 2 +	
	2 = +[1]	50 per cent. immune
	1 = +	
	5 = —	50 per cent. still susceptible
35 + [1] or + (Moderate reactors)	4 = +	68.5 per cent. immune
	7 = ±	20 per cent. doubtful
	24 = —	11.5 per cent. probably susceptible

Results with Injections of Double the Foregoing Amounts

Before Injection	Two Weeks After First Injection	Four Weeks After First and Two Weeks After Third Injections
12 + + or + +[1] (Strong reactors)	3 = 2 +	2 = +[1]
	3 = + Week	1 = ±
	2 = ±	9 = —
	3 = —	
	1 not tested	
	27 per cent. immune	75 per cent. immune, 16 per cent. not immune, 8 per cent. doubtful

+ + Indicates a Dick reaction of 2 cm. in diameter and + of 1 cm.
+[1] Indicates more than + and ± less than +.

reddening 2 cm. in diameter indicates marked susceptibility; 1 cm. in diameter, some degree of susceptibility to scarlet fever.

In a series of skin tests, reported in January, 1923, the Dicks found a positive or strongly positive reaction in 41.6 per cent. of the persons who gave no history of scarlet fever, and negative or only slightly positive reactions in all the convalescent fever patients tested. Zingher's observations fully corroborate these findings and show that the results in age groups from the Dick test were very similar to the results from the Schick test.

This skin test was developed before they attempted to produce experimental scarlet fever with the type of streptococcus that does not ferment mannite. In selecting their volunteers for inoculation with this type of streptococcus, they chose one with a negative skin reaction, and one with a positive reaction. The two volunteers were inoculated with the same culture. The one with a negative skin test remained well, while the volunteer who had shown a positive test developed scarlet fever.

In the instances in which they had an opportunity to observe the skin reaction before and after an attack of scarlet fever, it was positive before the attack, and negative during convalescence. It is now known that there are about 10 per cent. of exceptions to that rule.

These authors [10] also found that if persons with positive skin tests received convalescent scarlet fever serum intramuscularly, their skin tests became negative. With more definite doses than Gabritschewsky used they then attempted to immunize persons against scarlet fever and utilize later their skin test to determine the development of antitoxic immunity. They found that, by proper dosage, they were able to immunize persons with positive skin tests so that their skin tests became negative and they did not contract scarlet fever on exposure.

10. Dick, G. F., and Dick, Gladys H.: The Prevention of Scarlet Fever, J. A. M. A. 83:84 (July 12) 1924.

They report a series of 125 persons exposed to scarlet fever. In this series, sixty-three showed negative skin reactions, and were not immunized. Fifty-two had positive skin tests, and were immunized with toxin. None of these persons contracted scarlet fever. They emphasize the importance of carrying the immunization to the point of a negative skin test. By the employment of three graded doses of toxin, they have been able to eliminate severe reactions.

While the Dicks were adding to the proof as to the causal relationship of certain strains of streptococci to scarlet fever, Dochez [11] was developing an antitoxic serum through a method developed by himself of injecting subcutaneously into animals masses of nutrient agar infected with scarlet fever streptococci. These injections, repeated from time to time in increasing amounts during from six to eight months, were found to develop a potent antitoxin. The serum of horses that had been subjected to such injections was found to give the Schultz-Charlton test, even when the serum had been diluted several thousand times. The serum was used in cases in New Haven and in New York, and the same results were regularly obtained as had been formerly obtained with unstandardized serum by Moser and Savchenko; but now the potency of the serum was established by the striking results with the Schultz-Charlton reaction. These were a demonstration to all that antitoxin was truly present.

Shortly after Dochez announced his serum, the Dicks made a report on the production of antitoxin by the toxic filtrate standardized by their method. Whether the Dochez method or the various modifications of the toxin with or without killed or living streptococci will finally be adopted remains for further comparative tests to decide. This will depend largely on the value of an antimicrobal substance in the serum. The results with the Dochez serum or the Dick serum agree absolutely with the reports of the use of the Moser serum.

ACTIVE IMMUNIZATION

Earlier in this paper I gave the work of Gabritschewsky and his followers. In the light of the Dicks' researches and the rashes that developed, it can be estimated that the Russian infants received about 1,000,

TABLE 4.—*Results in Dick Positive Children Three and One-Half Months After Receiving Three Immunizing Injections of Approximately 1,000, 2,000 and 4,000 Skin Doses*

	Reaction Three and One-Half Months Later	
11 + + or + +[1] (Strongly positive)	1 = +	68 per cent. immune
	3 = ±	27 per cent. doubtful
	7 = —	9 per cent. probably susceptible
10 + or +[1] (Moderate reactors)	1 = ±	90 per cent. immune
	*1 = pseudo	10 per cent. doubtful
	8 = —	
Total 21 cases	1 = +	76 per cent. immune
	4 = ±	19 per cent. doubtful
(Strong and moderate reactors)	15 = —	4 per cent. moderately susceptible
	1 = pseudo negative	

* Gave + reaction with and without mixture with a sufficient quantity of convalescent serum to neutralize the toxin.

2,000 and 4,000 skin test doses and older children 2,000, 4,000 and 8,000, or perhaps double that amount. With the Dick test, the dosage can be standardized and the immunity results determined by retesting from time to time. The scarlet fever toxin is much less injurious to the local tissues than the diphtheria toxin, so that there is no need of adding antitoxin to it or of changing

11. Dochez: Proc. Soc. Exper. Biol. & Med. 41:184 (Jan.) 1924.

it by formaldehyd. Yet, as the Dicks state, such chemical modification resulting in a decreased toxicity or toxoid is desirable, if it can be demonstrated that it accomplishes immunization with fewer doses or in a shorter time. The most suitable dose of toxin varies with conditions. If scarlet fever is prevalent, it is very desirable not to give sufficient toxin to make a rash in any of the very susceptible children, for there is no certain way of determining in such a case whether it is a case of light scarlet fever or of a toxin rash. Even if cultures are made, it is possible that streptococci which produce the scarlet fever toxin will be present, and yet the case will be due to a toxic rash. If, however, no scarlet fever is in the neighborhood, a slight scarlet rash is of no importance and larger doses can be given. The Dicks give an interesting summary of the relation of the total skin doses to the immunity results.

They advise skin doses for the first 500, for the second 1,500, and a considerably larger dose for the third.

Original Investigations.—Tables 3, 4, 5, 6 and 7 show the results in our tests following the injection of from 600 to 10,500 skin doses. The tests in these tables, with the exception of the one by Zingher, were made by Schroder and read by her, Williams and myself.

TABLE 5.—*Results of Five Immunizing Injections at the End of Three and One-Half Months Approximately 500, 1,000, 2,000, 3,000 and 4,000 Skin Test Doses*

	After Three and One-Half Months	
32 + + or + +[1] Strongly positive cases	1 = +	91 per cent. immune
	5 = ±	= 17 per cent. probably immune
	23 = —	= 2 per cent. probably susceptible
	*3 = ± negative pseudo	
36 + or +[1] Moderate reactors	34 = —	
	*1 = + negative pseudo	100 per cent. immune
	*2 = ± negative pseudo	
69 + to + +[1] All positive reactors	1 = +	91 per cent. immune
	5 = ±	7 per cent. probably immune
	57 = —	1 per cent. probably susceptible
	1 = + negative pseudo	
	5 = ± negative pseudo	

*1 + and *5 ± are considered negative pseudo reactions because of an equal reaction in the control neutralized by convalescent serum.

The persistence of the acquired immunity following injections remains in doubt. With small injections, such as in the cases recorded in Table 7, many of the originally very positive cases have after a year relapsed, while the originally moderately positive cases have generally continued to hold their immunity or to increase it.

With much larger injections, such as those recorded in Tables 4 and 5, the immunity response is so much greater that it is hoped that the marked positive cases will not only develop immunity but hold it for a period of years.

We note in these tables that the moderately reacting cases develop complete immunity much more readily than the strongly reacting cases; again, that the response is quicker than after diphtheria toxin-antitoxin or toxoid injections. This corroborates the views of Gabritschewsky and the statements of the Dicks that immunity develops in many within one or two weeks.

The results of a second series of injections in those who have not responded to the first series have been excellent.

The persistence of a negative Dick reaction in those found to be negative: Observations on several thousand children by Zingher and Schroder at different intervals of time up to thirteen months have shown that a naturally acquired immunity is usually persistent for at least one year. Only about 2 per cent. of those originally negative have been found to change. It is fair to assume, therefore, that as in the case of naturally acquired immunity to diphtheria, the immunity to scarlet fever naturally acquired is apt to remain. This finding, which is in accord with the findings of the

TABLE 6.—*Immunity Results After Four Weeks with Three Injections of Scarlet Fever Toxin (Dick Test)—1,200 Skin Test Doses in All (Zingher)* *

	Dick Retest After from Four to Five Weeks						
			Dick Positive and Combined			Dick Negative and Pseudo	
Institution	Per Cent. Positive Dick at Original Test	Total Retested	Number Positive As in Original Test	Number Less Strongly Positive	Per Cent. Less Strongly Positive	Number	Per Cent.
Hebrew Orphan Asylum	29.2	143	19	20	14.0	104	72.7
New York Orphanage	44.4	91	19	36	39.5	45	49.4
Lenk and Watts Home	22.0	40	12	10	25.0	18	45.0
Total	—	274	41	66	24.0	167	61.0

* Doses given: under 12 years, 200, 500 and 500 skin test doses at weekly intervals; over 12 years, 200, 500 and 1,000 skin test doses at weekly intervals.

Dicks, encourages us to hope that, with larger and perhaps more numerous doses, even the very positive cases may acquire such a high degree of immunity that it will last for at least a few years. We already have the knowledge that these immunizing injections are very useful in stopping an outbreak of scarlet fever.

THE SERUM TREATMENT OF SCARLET FEVER AS OBSERVED AT THE WILLARD PARKER HOSPITAL

Scarlet fever antitoxin was first administered by us in January, 1924. This was made possible through a supply of serum by Dr. Dochez. The first serum was only moderately potent, and in the doses given by the intramuscular method, the results though good were not striking. In January, 1925, it was decided to give it to alternate patients, and in severe cases to give it intravenously. The antitoxin most used was our own preparation obtained from two horses that had received

TABLE 7.—*Results of Injecting 100, 200 and 400 Skin Test Doses as Shown by Retest Five and Thirteen Months Afterwards at St. Dominicks*

	Five Months After	Per Ct.	Thirteen Months After	Per Ct.
One hundred positive cases of St. Dominicsk Test by Dr. Schroder	+ + = 0		+ + = 20	
	+ = 8 =	9.8	+ = 9	susceptible
	+ = 27 =	33.8	± = 14	doubtful
	± and — = 46 =	56.8	± or — = 57	immune
	Total 81		Total 100	

increasing toxin injections for nine months and more; but in about one fourth of the cases we used a new preparation of the serum sent us by Dochez. The result of the intravenous injection was so striking that the medical board decided in March, 1925, to give all patients having a rash and a temperature of 101 F. or higher antitoxin and to give it to alternate patients having a temperature lower than 101. It was given intravenously in all severe cases.

The antitoxin serum was given by Dr. Mildred McBride, the assistant resident physician who was in charge of the scarlet fever service at the Willard Parker Hospital. The attending physician on duty and I watched with her the effects of the treatment. The potency of the antitoxic serum was tested either by the Schultz-Charlton blanching test or by the more accurate Dick neutralization tests of the toxin. The potency ranged from 50 to 150 units per cubic centimeter; that is, 1 c.c. of the serum neutralized between 5,000 and 15,000 Dick test skin doses of toxin.

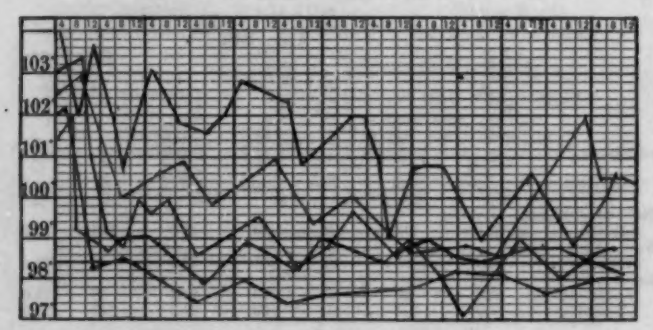

Chart 2.—Temperature curves in five uncomplicated cases after an intramuscular injection of antitoxin.

Most of the serum was not refined. About fifty patients however, received the refined antitoxic globulin solution. The therapeutic results were alike, but rashes occurred in about 60 per cent. after the injection of the unrefined serum, and in only about 30 per cent. after injection of the refined. The rashes and other symptoms of serum disease that did occur were more severe with the unrefined. No serious after-effects occurred in any case, but the serum sickness in some was very annoying. The dosage was determined by much the same principles that govern the dosage of diphtheria antitoxin. A sufficient dose should be given at the earliest possible moment. An amount should be given in the first dose to make and keep the fluids of the body antitoxic. If, however, the temperature rises after the drop, a second injection should be given. The size of the dose is influenced by the weight of the individual and the severity of the case. Whether a late case in which there is still a marked rash should be treated with larger doses than an early case of equal severity is in our belief doubtful and remains still a matter for further investigation. Intravenous injections of sufficient size give the most striking results. The fluids of the body become quickly antitoxic, as shown by the Dick test. This, when done even an hour or two afterward, is always negative, if a sufficient dose has been given, and remains negative if done later in the disease.

The results from sufficiently large intramuscular injections are certain, but they develop more slowly. The Dick test is positive for from six to twelve hours after an intramuscular injection. It then becomes negative.

The results as noted at the bedside in the majority of patients are very striking. The higher the temperature and the more toxic the case, the more striking will be the results if the serum is given very early in the disease. After an intravenous injection in an early uncomplicated case, the patient, as a rule, finds within a few hours that the throat is less sore, the mind clears, vomiting ceases, the appetite returns, and the temperature and pulse begin to fall. Within from six to eight hours, a delirious and a very sick patient is often convalescent. With a larger dose given intramuscularly the same results follow, but more slowly. With insufficient dosage there is a less rapid improvement, and the toxic symptoms may return. Our results were practically identical with those reported by Blake[12] and Birkhaug.[13]

The following two cases showed favorable results after intramuscular injection in the first and intravenous injection in the second:

CASE 1.—G. C., a boy, aged 7, was sick two days with headache and vomiting. A rash developed on the morning of the 23d. On admission in the afternoon, the temperature was 103 F.; pulse rate, 150; rash marked, and throat inflamed. The Dick test made on admission was positive. The severity was from moderate to severe. The patient was given intramuscularly 40 c.c. (about 3,200 units) of Dochez' antiscarlatinal serum. On the 24th, the rash was greatly lessened; the Dick test made in the morning was negative, and the temperature was 101 F. in the morning and 100 F. in the afternoon. On the 25th, the rash was gone; the temperature, 99.6 F. The patient made an eventful recovery (Chart 1).

CASE 2.—A. K., a man, aged 32, who had a sore throat on the 17th, with a rash appearing on the 19th, was admitted early in the afternoon on the 20th. The temperature was 102 F. and rose to 104 F.; the pulse rate was 130. The throat was inflamed. Adenitis was present, and the patient was fairly toxic. He received on admission 2,400 units of antitoxic serum intravenously. Within two hours he felt improvement. At the end of six hours, the temperature had fallen to 98.8 F., the rash had faded and the patient felt almost well. Convalescence was uncomplicated (Chart 1).

Chart 2 gives the temperatures of five patients who received intramuscular injections. The drop in temperature is comparatively slow. Two of these patients received insufficient amounts of antitoxin.

Chart 4 gives the composite temperature curves of twenty-five severe, twenty-five moderate and twenty-five light cases of scarlet fever treated with serum

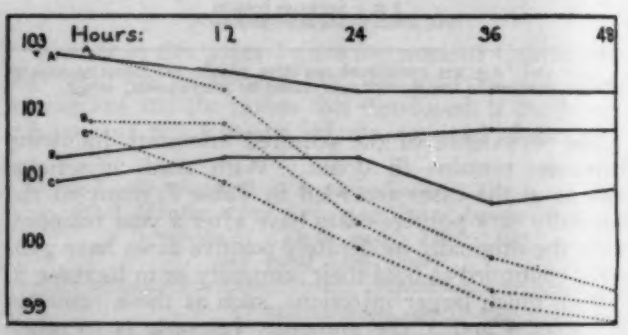

Chart 4.—Average temperatures of seventy-five patients treated with serum and seventy-five patients treated without serum: solid line, patients treated without serum; dotted line, patients treated with serum. There were twenty-five cases of each: *A*, severe; *B*, moderate; *C*, mild.

during the first three days of the disease and an equal number without.

Complications.—The antitoxin has little effect on complications, such as infection in the tonsils, in the middle ear, in the mastoid, in glands of the neck or in the endocardium, when they have already developed; but before they have developed the antitoxin appears to be of service in preventing their occurrence. This is probably due to the raising of the resistance of the local tissues and of the body as a whole so as frequently to prevent or restrict the invasion of the body by the streptococci. These streptococci may be those producing the

12. Blake, F. G.: Boston M. & S. J. **191**: 43-47 (July 10) 1924.
13. Birkhaug: Bull. Johns Hopkins Hosp. **36**, No. 2, p. 134.

scarlet fever or other varieties. An interesting case was that of a woman sick with toxic scarlet fever complicated by severe erysipelas. The delirium vanished, the vomiting ceased, the temperature was lowered and the rash faded, but the erysipelas ran its usual course. Table 8, which shows the complications developing in seventy-five cases that were treated and in seventy-five that were untreated, indicates a favorable influence of the antitoxin in preventing complications. As long as the rash remains, antitoxin is indicated.

The cases in Table 8 are not strictly comparable, since the severe and moderate cases which were not treated with serum are taken from 1924, while the serum-treated cases occurred in 1925. The diagnosis of nephritis is based mostly on the urine examinations and is probably not wholly accurate. The kidney complications, on the whole, are seen to be decidedly less in the cases treated with antitoxin early, but the other complications are about the same.

Reduction in Mortality.—During the year 1924, when scarlet fever was very light, 569 patients with scarlet fever were admitted to the hospital. About forty of these received scarlet fever antitoxin. The mortality among the 569 patients was 2.8 per cent. During April and May of this year, when all patients with cases of any severity and with a rash were receiving serum, there were 220 admissions. Of these, six patients, or a percentage of 2.7, died.

These figures, considered without a knowledge of the cases, would be very misleading; but they cause one to wonder what proportion of the 150 or more deaths from scarlet fever which occur yearly in New York can be eliminated by the use of serum. In three of the six fatal cases the patients were admitted so late that they were absolutely unsuitable for antitoxin, but in three of them they were admitted on the third day. The histories of these six fatal cases are as follows:

CASE 3.—A child, aged 11, admitted thirty-eight days after the development of scarlet fever, showed symptoms of meningitis. Death occurred three weeks later. Necropsy showed several small brain abscesses.

CASE 4.—A child, aged 7, admitted on the ninth day of disease, with double otitis media, septicemia and signs of endocarditis, died in three days.

CASE 5.—A man, aged 35, admitted in the afternoon on the sixth day of the disease, with an intense rash still present, and a temperature of 104.8 F., received 60 c.c. of Dochez serum intravenously (about 5,000 units). The temperature dropped within six hours to 99.5 but rose the following afternoon, when he died. Necropsy showed purulent bronchitis and toxic changes.

CASE 6.—A patient, aged 23, ill three days, with a marked rash, marked pharyngitis with grayish exudate and a temperature of 103.6 F., received 30 c.c. of serum intravenously (about 1,800 units). Complete anuria was present during the first thirty-six hours. The temperature dropped to 99 in eight hours following the administration of the serum, but rose again. The rash remained pronounced for three days. The patient died on the fourth day after admission.

CASE 7.—A patient, aged 21, following a kidney operation at another hospital, developed scarlet fever, and was sick three days before admission. The patient appeared toxic with a generalized hemorrhagic rash. The temperature was 103 F. The patient was given 30 c.c. of serum (about 2,000 units) intravenously. The temperature dropped 4 degrees in eight hours, but rose in the afternoon just before death. The rash remained, but was somewhat faded.

CASE 8.—J. M., aged 3½ years, was taken ill with vomiting, May 10, developed a rash on the 12th, and was admitted on the 13th, with a temperature of 104.8 F., a generalized hemorrhagic rash and an intense pharyngitis with exudate on the tonsils. Several hours after admission, 30 c.c. of antitoxic serum (about 2,400 units) was given intravenously. The temperature dropped to 100 F., but rose to 102 in afternoon. Another 40 c.c. of serum was given intravenously. The temperature dropped to 101, but rose in the evening to 103 and continued between 101 and 103 until death, May 20. The rash did not fade until the 19th. Necropsy revealed an ulcerative inflammation of the mouth, esophagus and stomach.

In the last three of the six fatal cases, the serum was given about as quickly as would generally be possible. Nevertheless, the patients responded only temporarily and inadequately to the antitoxic serum. It is possible that if the serum had been given immediately after the development of the rash, a better result might have been obtained or perhaps much larger or repeated doses of antitoxin might have done more good. There is also the possibility that some of the cases presenting septic rashes are not ordinary scarlet fever and are due to streptococci that differ in the type of their toxins from those produced by the ordinary strains. We have evidence of such difference, but unfortunately we did not isolate and test the streptococci from these cases for their toxins.

TABLE 8.—*Complications Developing in Scarlet Fever in Seventy-Five Cases Untreated with Serum and in Seventy-Five Early Cases Treated with Serum*

	Nephritis	Otitis	Adenitis	Arthritis	Mastoiditis
Twenty-Five Severe Cases:					
Without serum..	9	13	8	9	5
With serum.....	2	6	11	5	3
Twenty-Five Moderate Cases:					
Without serum..	9	8	8	8	0
With serum.....	0	7	11	4	0
Twenty-Five Mild Cases:					
Without serum..	4	0	8	2	0
With serum.....	0	4	6	2	0

CONCLUSIONS ON THE THERAPEUTIC VALUE OF ANTITOXIN

The antiscarlatinal serum produced by Moser and Savchenko produced the same therapeutic results as that now produced by the Dochez method or by the subcutaneous injection of known doses of toxin. The value of the earlier products was greatly handicapped by the lack of any means such as the Schultz-Charlton and Dick methods for estimating their antitoxic potency. Because of this lack of knowledge, serum weak in antitoxin was undoubtedly frequently used with disappointing results.

The antitoxic serum should be given in sufficient amount as early in the disease as possible. When thus given, the results in most cases are strikingly favorable. The early use of antitoxin probably frequently prevents the development of complications.

Antitoxin is useless after the rash has disappeared and has no effect on the later septic complications.

In moderate cases it should be given intramuscularly. In severe or toxic cases it should be given intravenously. As a rule, a single dose of sufficient size is enough, but in severe cases in which the symptoms return, a second dose in from twelve to twenty-four hours is often desirable. It is too early to state whether the serum should be given in very mild cases, since the serum sickness is often more annoying than the scarlet fever.

The refined antitoxic serum produces fewer and less severe rashes than the unrefined, and should in time be the only preparation used. A unit should be adopted, so that results from different dosages may be compared. The one suggested at a recent meeting of immunologists in Washington seems to be suitable.

One unit is defined as the amount of antitoxin that neutralizes 100 skin test doses (Dick), as determined by an intracutaneous test in man. A dosage between 2,000 and 10,000 units will probably suffice in the great majority of cases. A few of the failures of antitoxin may be due to the fact that some toxic cases may be due to streptococci that produce other toxins than are neutralized by the antitoxin used. This is an interesting problem for further study. Whether it will be of marked advantage to combine an antimicrobial serum with the antitoxic serum is still doubtful, but merits careful investigation.

Such a serum used alone in the past has given doubtful results, but combined with antitoxin it may add to the benefit produced. There would thus be a return to a serum such as was used by Moser, but with knowledge of the potency in both the bactericidal and the antitoxic properties.

Department of Health.

ABSTRACT OF DISCUSSION

Dr. Abraham Zingher, New York: I shall present my own results with the Dick test and active immunization with scarlatinal toxin before the Section on Pharmacology and Therapeutics. The work covers more than 15,000 Dick tests and 2,000 active immunizations with scarlatinal toxin. I wish to emphasize just now the logical and careful manner in which Dr. Park has given us the historical development of the serum treatment of scarlet fever, which was brought to the attention of the medical profession twenty-five years ago by Moser in Austria and twenty years ago by Sovchenko in Russia. The serums recently described by the Dicks and by Dochez do not differ from these older serums, and if anything are inferior to Moser's serum, which is a polyvalent antibacterial and strongly antitoxic serum. Such a serum will probably be the ideal future therapeutic agent in the treatment of scarlet fever. The clinical results published by Blake and his associates are no better than those so carefully reported by Moser and Escherich in Austrian and German literature in 1903. There is no reason, therefore, why one commercial manufacturing laboratory should claim that the Dochez serum is the best, and another firm, that the Dick serum is the best. The work of Gabritchewsky and his associates, who immunized between 1906 and 1910 more than 50,000 people in Russia with a broth culture of the scarlatinal streptococcus, definitely indicates, as Dr. Park has pointed out, that Gabritchewsky and the other Russian observers fully identified the specific hemolytic streptococcus as the cause of scarlet fever. The careful description given by Gabritchewsky of the rashes and other constitutional symptoms following in 15 per cent. after the injection of his toxin-vaccine shows that he was fully cognizant that the organism produces a soluble toxin similar to the diphtheria toxin. Moreover, he stresses that the rashes were noted because the toxic broth culture was injected into human beings who are susceptible to the specific action of the toxin, while animals appear to be immune to it. The constitutional symptoms following the injections of Gabritchewsky's toxin-vaccine were exactly the same as those described by the Dicks in their publication a year ago. One can therefore state that neither the toxin nor the antitoxic serum is a new discovery. The work of the Dicks consisting of actual production of scarlet fever in human beings and the development of a test along the lines of the Schick test has helped in clearing up the etiology of scarlet fever and will be of value in the future control of the disease. I cannot close my remarks without mentioning one thing that occurred to me when I heard Dr. Lindsley Williams speak just now on the possibilities of establishing a federal health department in this country. In the early part of 1919, while in France, I went to see Dr. Haven Emerson in Tours and said to him that no mention was made in the covenant of the League of Nations, which had just appeared, of an international health bureau to correspond to the proposed international labor bureau. He suggested that it would be useless to look forward to the establishment of such a bureau when, in a country like ours, we have not yet succeeded in grouping our health activities under a federal health department. But hope springs eternal, and today we have a health section of the League of Nations. There is no reason why we should not have in this country a highly efficient federal health agency with a responsible cabinet officer. Beneficial results would not be slow in coming; also we would not have to hear with jealousy from our Canadian friends, as we heard last night, that the government there has ruled that medical men and women are the only ones who can be called today in Canada by the title "doctor," while all the others of the variegated therapeutic fraternity are known as "mechanics."

Dr. William H. Welch, Baltimore: I desire to correct the statement inadvertently made by Dr. Zingher that the covenant of the League of Nations said nothing about protection and promotion of health as one of the obligations and functions of the league. There is an important provision in the covenant covering this question of health, and as should be well known, although apparently it is not, there has been created an active and most useful health section of the league, which is engaged in important activities in the field of international health.

Dr. Matthias Nicoll, Jr., Albany, N. Y.: I would ask a question for my guidance as a health officer, as to whether Dr. Park believes that testing for immunity and conferring of immunity on susceptibles have reached such a point that the state health officers should advocate this as a general procedure and start a campaign to that end in the same way that is done in the case of diphtheria? As state commissioner of health I have felt like waiting on further results in the city of New York, believing it would be a mistake in view of the active campaign for eradication of diphtheria to add still another campaign which involved, to my mind, some difficult procedures on the part of general practitioners and local health officers, and up to the present time I have confined my action to distributing at various stations throughout the state supplies from the state laboratory of the scarlet fever antitoxin for curative purposes, and not emphasized or started a campaign against scarlet fever. I have been tremendously impressed with the therapeutic value of this remedy, which I have myself observed with Dr. Park at the Willard Parker Hospital. I should like to hear Dr. Park's opinion as to the best course for state and local health officers to advocate regarding testing for immunity to scarlet fever and inducing immunity in susceptibles on a large scale.

Dr. William H. Park, New York: Just a word about Dr. Zingher's statement that Moser had a better serum than that produced by Dochez or Dick. We had no way of standardizing Moser's serum; some of it was probably very good and some very poor; that is probably the reason it fell into disuse because it could not be standardized at that time. As to the question of refined and unrefined, we have had our hospital use the unrefined in about 150 cases and the refined in about seventy-five. There has been no difference in the effects except in the rashes, other symptoms and serum sickness. There have been no bad results. As to the amount of toxin used in the Dick standard test, of course we must realize that the Dicks, just like Schick, are trying to separate the susceptible from those who are not. That is a difficult problem. If it is a little too strong there will be too many positives; if it is too weak there is the possibility of having people who are susceptible pronounced immune. As to Dr. Nicoll's question, it seems to me we have sufficient evidence to say that a negative Dick test in untreated cases indicates a fairly permanent immunity. Those who pass the test are probably immune for many years, maybe for life. As to immunization in general, I would advise at present to use it only when scarlet fever is more or less a possibility. In such instances people are interested and immunization will be of value to stop the present outbreak. I would not press it until another year has gone by at least, and until we know how permanent is the immunity and the number of doses that are best to give. We advise at the present time 500, 1,000 and 2,000 and then a final one of 5,000 skin doses.

NOVASUROL IN THE TREATMENT OF ASCITES IN HEPATIC DISEASE*

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Novasurol is a double salt of sodium mercurichlorphenyl oxycetate with diethylbarbituric acid (barbital), and contains 33.9 per cent. of mercury. It was introduced originally by Zieler [1] as a remedy for syphilis, but at present it is being used largely as a diuretic. Since the beginning of the nineteenth century, mercury compounds have been recommended as diuretics by certain authors, but these have failed of general application because of ineffectiveness or of untoward or toxic effects. Novasurol has an advantage over metallic mercury and calomel in that it is freely soluble in water and may be administered by subcutaneous, intramuscular or intravenous injections.

Our interest in this drug was incited by a statement of Wenckebach, in whose clinic Saxl and Heilig [2] first proved its efficacy in cases of cardiac dropsy, in the treatment of which its best results have been obtained. It often succeeds in cases in which the purin derivatives and digitalis have failed. Apparently it has also proved useful in some cases of edema of renal origin, as shown by Keith, Barrier and Whelan,[3] and it will unquestionably play an important part in the future in the treatment of certain types of nephritic edema.

ACTION OF NOVASUROL

Saxl and Heilig [2] demonstrated a relative and absolute increase in the excretion of chlorids in the urine. Bohn [4] proved that this occurred in normal rabbits. Nonnenbruch [5] and Mühling [6] showed that novasurol caused an increase in the excretion of chlorids in the urine in normal persons, but that diuresis did not always occur. Keith and Whelan [7] confirmed this finding in two normal persons and in the dog. They also found that, under the influence of this drug, there was a relative and absolute increase in the output of sodium in the urine.

According to the literature, the results from novasurol in cases of ascites and edema of portal cirrhosis are unsatisfactory. Brunn [8] states that diuresis failed to appear in cases of cirrhosis of the liver, and that headache and vomiting followed its use in one case. Mühling [6] records increase in icterus following its use, evidence, he believes, of injury to the liver. Hassencamp [9] failed to induce diuresis in two cases of hepatic cirrhosis. On the other hand, Bleyer [10] obtained a good effect in one case, and Fodor [11] maintains that novasurol is effective in the ascites of cirrhosis a. l in polyserositis, provided the patient presents a good blood pressure. Rowntree and Barrier [12] have reported some excellent results in cases of cirrhosis of the liver and Banti's disease.

The clinical material serving as the basis of this report comprises twenty cases in all, including ten cases of portal cirrhosis, two of portal cirrhosis and cardiac decompensation, two of syphilitic cirrhosis, two of Banti's disease, two of neoplastic disease with metastasis to the liver, one of polyserositis, and one of polycythemia with chronic endocarditis and myocardial insufficiency. In each of these cases the ascites was marked, and in most of them constituted an outstanding clinical feature. Demonstrable cardiac and renal insufficiency was lacking in all but three, but in these it unquestionably constituted an additional factor in the causation of the edema, as shown in the accompanying tabulation.

The medical treatment of ascites is similar to that of general edema, especially in the restriction of water and salt, the control of diet and the use of diuretic drugs. Novasurol has been used alone in certain cases with striking results. However, the best results have come from the combined use of novasurol intramuscularly or intravenously, and ammonium chlorid by mouth, together with a controlled diet of a fixed low-water and low-salt content.[13] Novasurol is given in doses up to 2 c.c. intramuscularly or intravenously at intervals of from three days to a week. The tolerance of this drug is first determined by the administration of from 0.5 to 0.75 c.c. intramuscularly. Ammonium chlorid is administered by mouth in divided doses up to 10 gm. daily, and is best given in the crystalline form in capsules of 0.75 gm. or 1.50 gm. In nineteen of the twenty cases, diuresis has resulted from this treatment.

In eight cases, during the diuretic periods, the urinary excretion of chlorin and sodium was relatively and absolutely increased; that of potassium and calcium usually absolutely increased. These results indicated a marked increase in the total output of fixed base. Actual determination of the total fixed base, by the method of Fiske,[14] accurately confirmed the increase indicated by the analysis of the individual bases. The total output of urea, ammonia and total nitrogen was also slightly increased. The greater and more constant diuresis, which we have obtained with novasurol combined with ammonium chlorid, appears to be due to the increased chlorin in the tissues, rather than to the decrease in the alkali reserve.

Blood analysis in many of these cases failed to show any constant changes in the concentration of hemoglobin, serum protein and chlorin. On two occasions, there was a fall in the serum chlorin during diuresis, as

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the authors' reprints. A copy of the latter will be sent by the authors on request.

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4. Bohn, Hans: Experimentelle Studien über die diuretische Wirkung des Novasurols, Klin. Wchnschr. **2**: 352-353 (Feb. 19) 1923.

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6. Mühling, Adolf: Studie über die diuretische Wirkungsweise von Quecksilber, ausgeführt mit dem organischen Quecksilber-präparat Novasurol, München. med. Wchnschr. **2**: 1447-1449, 1921.

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9. Hassencamp, E.: Novasurol als Diuretikum, Zentralbl. f. inn. Med. **43**: 105-108 (Feb. 11) 1922.

10. Bleyer, Leo: Erfahrungen über die Novasuroldiurese, Klin. Wchnschr. **1**: 1940-1942 (Sept. 23) 1922.

11. Fodor, Emmerich: Ueber das Indikationsgebiet des Novasurols als Diuretikum, Med. Klin. **19**: 684-685 (May 20) 1923.

12. Rowntree, L. G., and Barrier, C. W.: Diuretic Effect of Novasurol in the Ascites of Portal Obstruction, Collected Papers of the Mayo Clinic **16**: 221-223, 1924.

13. The low-fluid, low-salt daily diet contains 800 c.c. of water, and ions as follows: sodium, 0.49 gm.; potassium, 1.76 gm.; calcium, 0.23 gm.; magnesium, 0.20 gm.; chlorin, 0.74 gm. Eight hundred cubic centimeters of water, besides that in the food, is also allowed.

14. Fiske, C. H.: A Method for the Estimation of Total Base in Urine, J. Biol. Chem. **51**: 55-61 (March) 1922.

has been reported by Crawford and McIntosh [15] in their cases of cardiac edema. Nor did we find any constant changes in the concentration of the inorganic ions in the serum. The carbon dioxid capacity of the plasma remained unchanged during the diuresis.

Novasurol produces an increased excretion of sodium and chlorin in the urine. Whether the seat of this specific action is in the kidney only, in the tissues generally, or in both, has yet to be determined. Combined studies of the constituents in both blood and urine have so far failed to reveal the exact site of its action, and further experimental work is required.

diuresis have caused the disappearance of ascites and edema in seven cases, and to a large extent, also, the evidences of collateral circulation. After the fluid has disappeared, the patients have improved remarkably in health and strength. Case 1 represents an excellent result and one that is rather characteristic of the group as a whole.

Clinical Results in Twenty Cases of Ascites

Case	Sex* and Age	Diagnosis	Date	Grade of Ascites	Weight, Kg.	Urine Output, C.c. Minimal	Urine Output, C.c. Maximal	Medication	Result of Treatment
1	♂ 63	Portal cirrhosis of liver.....	11/21/24	3	82.7	300	3,000	Novasurol, six doses.....	Excellent
			12/17/24	0	68				
			3/19/25	1	72.7	300	3,700	Novasurol, three doses.....	Excellent
			4/ 3/25	0	65.4				
2	♂ 48	Portal cirrhosis of liver.....	1/ 9/25	3	70.3	250	2,200	Novasurol, four doses.....	Excellent
			1/20/25	0	57.1			Ammonium chlorid	
3	♂ 47	Portal cirrhosis of liver.....	11/17/24	3	91.9	300	2,800	Novasurol, two doses.....	Unsatisfactory
			11/25/24	3	90.5			Ammonium chlorid	
4	♂ 58	Portal cirrhosis of liver and Endameba coli	12/ 8/24	3	88.2	375	3,650	Novasurol, four doses.....	Fair
			12/23/24	2	77.1			Ammonium chlorid	
			1/ 5/25	2	78.2	400	1,750	Novasurol, three doses.....	Unsatisfactory
			1/21/25	2	73.3			Ammonium chlorid	
5	♀ 27	Portal cirrhosis of liver.....	1/ 8/25	2	81.6	300	1,450	Novasurol, four doses.....	Fair
			1/27/25	1	75.3				
			4/28/25	2	86.1	350	4,800	Novasurol, four doses.....	Excellent
			5/13/25	0	68.9			Ammonium chlorid	
6	♂ 55	Portal cirrhosis of liver.....	4/13/25	3	86.2	300	3,700	Novasurol, seven doses.....	Excellent
			5/22/25	0	72.6			Ammonium chlorid	
7	♀ 55	Portal cirrhosis of liver.....	4/ 7/25	3	66.7	200	1,300	Novasurol, six doses.....	Fair
			4/24/25	2	61.7				
8	♂ 50	Portal cirrhosis of liver.....	4/10/25	3	55.1	400	2,000	Novasurol, five doses.....	Good
			4/18/25	0	47.4				
9	♂ 52	Portal cirrhosis of liver.....	5/ 2/25	3	62.4	700	2,900	Novasurol, five doses.....	Excellent
			5/16/25	0	58.1			Ammonium chlorid	
10	♂ 51	Portal cirrhosis of liver.....	5/ 6/25	2	81.8	500	2,500	Novasurol, three doses.....	Excellent
			5/18/25	0	75.5			Ammonium chlorid	
11	♀ 40	Syphilitic cirrhosis.....	11/29/24	2	64.9	300	1,300	Novasurol, four doses.....	Fair
			1/ 3/25	1	59.4			Ammonium chlorid	
12	♂ 57	Syphilitic cirrhosis.....	4/ 7/25	4	72.6	600	1,600	Novasurol, six doses.....	Fair
			4/21/25	2	63.5			Ammonium chlorid	
			5/13/25	3	63.5	500	2,000	Novasurol, one dose.....	Excellent
			5/26/25	0	56.7			Ammonium chlorid	
13	♂ 40	Abdominal neoplasm.....	2/ 3/25	3	102.1	200	500	Novasurol, one dose.....	Unsatisfactory
14	♂ 61	Abdominal neoplasm.....	4/14/25	3	53.7	800	3,000	Novasurol, three doses.....	Good
			4/25/25	1	43.5			Ammonium chlorid	
15	♂ 49	Banti's disease.....	6/13/24	2	95.9	200	500	Novasurol, three doses.....	Excellent so far as edema and ascites were concerned; died six mo. later from hemorrhage
			7/ 1/24	0	86.3		2,000+?		
16	♂ 38	Banti's disease.....	10/17/24	3	71.2	600	2,900	Novasurol, eight doses.....	Excellent
			11/28/24	0	55.8			Ammonium chlorid	
17	♀ 20	Polyserositis (Pick's disease)..	2/25/25	3	50.0	200	2,800	Novasurol, eight doses.....	Excellent
			4/ 1/25	0	44.5			Ammonium chlorid	
18	♂ 68	Myocardial degeneration; portal cirrhosis of liver; chronic nephritis	1/20/25	4	111.0	400	4,600	Novasurol, six doses.....	Excellent
			3/ 9/25	0	70.1			Ammonium chlorid	
19	♂ 55	Myocardial degeneration; portal cirrhosis of liver	10/31/24	3	99.6	500	1,600	Novasurol, three doses.....	Good
			12/12/24	0	79.8			Theocin	
			1/ 6/25	2	84.8	400	2,300	Digitalis and theocin.....	Good
			1/22/25	0	80.5				
			4/16/25	2	88.2	400	1,400	Digitalis	Good
			5/ 2/25	0	81.2				
20	♂ 35	Chronic endocarditis; mitral disease; polycythemia	6/ 8/25	3	60.8	200	2,050	Novasurol, seven doses.....	Excellent
			7/ 6/25	0	51.3			Ammonium chlorid	

* In this column, ♂ indicates male; ♀, female.

RESULTS IN CIRRHOSIS OF THE LIVER

Novasurol has been employed in this series in ten cases of cirrhosis of the liver associated with ascites, and has caused diuresis in all. Repeated periods of

Case 1.—*Atrophic portal cirrhosis of the liver.* A man, aged 63, admitted to the Mayo Clinic, Nov. 11, 1924, complaining of enlargement of the abdomen (ascites), had had an acute attack of right-sided abdominal pain associated with hematuria on Thanksgiving Day, 1923, attributed, by the family physician, to renal calculus. The patient had suffered from bilateral inguinal hernia for fifteen years. He complained of a bloating sensation and diarrhea for one month during the spring of 1924. In July, he found that the hernial contents were reduced with more difficulty and that they frequently "slipped out" during the night, causing discomfort and loss of sleep. Operation, in August, revealed free abdominal fluid, and the examination showed enlargement of the spleen. His local physician made a diagnosis of cirrhosis of the liver.

15. Crawford, J. H., and McIntosh, J. F.: Observations on the Use of Novasurol in Edema Due to Heart Failure, J. Clin. Investigation 1: 333-358 (April) 1925.

Early in September, the abdomen began to enlarge and the quantity of urine to diminish appreciably. This progressed steadily, and with it slight swelling appeared in the feet and ankles and lower part of the legs. His weight remained almost stationary, with fluid collecting in the abdomen, but the face, arms and legs became noticeably thinner. During the two weeks before admission, he experienced a growing tendency to weakness with occasional slight dizziness, and to difficulty in starting urination, especially when the daily quantity was small.

He weighed 195 pounds (88.6 kg.). The abdomen was markedly distended with fluid. Collateral channels over the abdomen and thorax were moderately well marked. The face, arms and legs were moderately emaciated. The tongue was red and parched. The tonsils were enlarged, and fluid pus could be expressed. An enlarged cervical gland was found, and on biopsy proved to be inflammatory in nature. The heart measured 2.5 cm. to the right and 14 cm. to the left, the apex being in the fourth intercostal space. A systolic murmur was audible over the entire precordium, and the aortic second sound was accentuated. The peripheral vessels were sclerosed 2. The blood pressure was 160 systolic and 100 diastolic; the pulse was 100. The lungs were clear. Other than ascites 3, nothing could be made out in the abdomen. Moderate edema was evident in the legs and in the sacral region. The eye-grounds were clear except for mild senile fibrosis of the retinal arteries. The urine was scanty, from 200 to 300 c.c. daily, with a trace of albumin. The hemoglobin was 55 per cent.; the erythrocytes numbered 3,480,000, and the leukocytes 3,000, with neutrophils 53 and lymphocytes 45 per cent. The phenolsulphonephthalein output was 45 per cent., and the blood urea 40 mg. for each 100 c.c. of blood.

The patient was admitted to the hospital. A diagnosis of cirrhosis of the liver was made, the abdomen tapped, and 12 liters of fluid withdrawn. At this time, the liver was found to be markedly enlarged and firm in consistency, extending 5 cm. below the left costal margin. The fluid rapidly reaccumulated during the next week, and a second paracentesis was considered. His weight was 181 pounds (82.7 kg.), and the blood pressure 140 systolic and 54 diastolic. There was retention 3 of phenoltetrachlorphthalein, but the serum bilirubin was normal (1.4 mg.). The stools were light in color; the urine did not contain bile.

The patient was placed on a diet; fluids and salts were restricted, and novasurol was given. Diuresis followed each injection, and the weight rapidly diminished as the ascites disappeared. Tests of hepatic function, made ten days later, showed a normal amount of bilirubin in the serum (1.6 mg.), dye retention 2, and a positive fructose tolerance test. The effect of novasurol is shown in Chart 1. At the end of four weeks the patient had lost 33 pounds (15 kg.); the girth had decreased from 110 to 85 cm., and fluid could be no longer detected in the abdomen. The spleen was easily palpable; in fact, a mass was visible on respiration, and the edge of the liver could be felt almost 4 cm. below the xiphoid, but not under the right costal margin. The patient had gained materially in strength and was walking about with great comfort. The hemoglobin was still 55 per cent., and the erythrocytes numbered 3,150,000, but the leukocytes had increased to 6,600. The patient was dismissed in excellent clinical condition.

The patient returned, March 19, 1925, for a review of his condition. He reported that it had been satisfactory since leaving the hospital about three months before. He had taken ammonium chlorid at intervals, but had had no novasurol since his dismissal. He had gained 12 pounds (5 kg.), and there was some tendency to recurrence of fluid in the abdomen (ascites 1), but little or no evidence of collateral circulation. The spleen was easily felt, but the edge of the liver was just barely palpable; edema 1 to 2 of the lower extremities was present. The urine was free from albumin and casts; the specific gravity was 1.027. The stool gave repeated positive tests for blood and bile. The tests of hepatic function showed dye retention 2 and serum bilirubin 0.9 mg. The patient was again admitted to the hospital and given ammonium chlorid for four days, with no loss in weight. Following his first dose of novasurol, a diuresis reaching 3,700 c.c. resulted. After a second dose of novasurol four days later, the fluid in his abdomen disappeared entirely. He was given a third dose, but the output of urine was only 1,000 c.c. He was dismissed, April 6, 1925, entirely free from ascites, and advised to continue the weighed low-fluid, low-salt diet with about 600 c.c. of extra fluid. He returned, July 8, 1925, weighing 130 pounds (60 kg.), and reported that he had had hematemesis two weeks previously. The retention of the dye was graded 1, and the serum bilirubin was normal.

RESULTS IN SPLENIC ANEMIA, BANTI'S DISEASE

In both of our cases of Banti's disease, the ascites was extreme, and in both there had been many previous tappings. They both responded to novasurol with results that are little short of marvelous.

CASE 16.—*Banti's disease and ascites.* A man, aged 53, was admitted to the clinic, Oct. 14, 1924, with the diagnosis of Banti's disease and ascites. His chief complaint was ascites and hematemesis for a period of three years. Between 18 and 43 years of age, the patient had been well except for "summer attacks of heavy pain across the lower abdomen, lasting from three to four days and relieved by catharsis." In

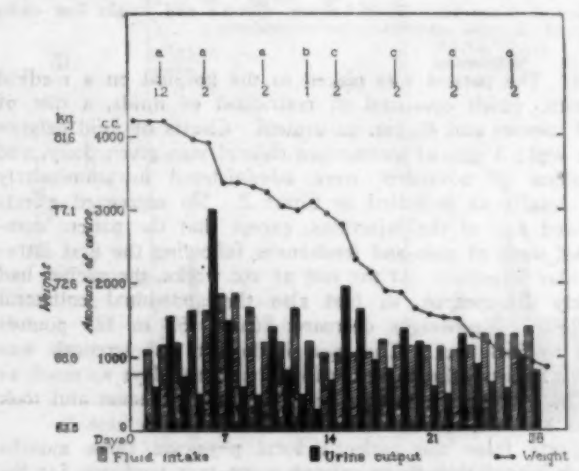

Chart 1 (Case 1).—Fluid balance, diuresis and weight loss under novasurol: *a*, intramuscular injection; *b*, intra-abdominal; *c*, intravenous. In the charts, the shaded columns indicate fluid intake; solid columns, urine output; solid line, weight.

July, 1906, he had had an attack of severe pain across the lower abdomen with a temperature of 101 F. He was placed on a liquid diet and lost 30 pounds (13.6 kg.). In August, 1914, he had had a sudden attack of pain in the region of the appendix. An operation was performed for acute appendical abscess. A hernia occurred at the site of the operation. In December, 1920, after a heavy meal, a sudden gastric hemorrhage occurred, with a loss of 1,500 c.c. of blood, and melena for five days thereafter. One month later his physician found an enlarged spleen, for which two roentgenologic treatments were given, with the result that the spleen became definitely smaller. In December, 1922, intestinal obstruction occurred in the region of the hernia, but the patient recovered satisfactorily. June 7, 1923, the hernia was repaired. In December, 1923, the veins over the abdomen, particularly in the region of the hernia, became greatly distended; ascites appeared; two severe gastric hemorrhages occurred, and the spleen became markedly enlarged. During the last year the patient had been tapped twenty-one times, and during the six weeks before admission he had become gradually weaker.

The patient was considerably emaciated. Pyorrhea 1 to 2, and marked ascites 3 were present. The spleen was palpable three finger-breadths below the costal margin. The blood pressure was 118 systolic and 78 diastolic; the pulse was 92. The urine was clear; the specific gravity was 1.010; the reaction was acid, with no albumin, sugar or bile, but a good

trace of urobilin and urobilinogen. The hemoglobin was 63 per cent.; the erythrocytes numbered 4,360,000, and the leukocytes 2,400. The coagulation time was seven minutes, and the bleeding time five minutes. The resistance of the erythrocytes was somewhat increased. A gastric test meal showed a total acidity of 20, free hydrochloric acid 8, and total quantity 100 c.c. The blood Wassermann reaction was negative. Examination of the fundi was negative except that there was a suggestion of fibrosis in the retinal arteries. The tonsils were somewhat enlarged. Studies of hepatic function showed a dye retention 1 and normal values for serum bilirubin. The patient was placed in the hospital on a medical regimen, which consisted of restriction of fluids, a diet of 1,500 calories and 40 gm. of protein. Charts of fluid balance were kept; 3 gm. of ammonium chlorid was given daily, and injections of novasurol were administered intramuscularly with results as indicated in Chart 2. No untoward effects followed any of the injections, except that the patient complained some of pain and tenderness following the first intramuscular injection. At the end of six weeks, the ascites had entirely disappeared, as had also the abdominal collateral channels. The weight decreased from 157 to 123 pounds (71.2 to 55.8 kg.). The gain in health and strength was equally striking, the patient walking on some days as much as 7 miles without undue fatigue. He returned home and took up his business responsibilities with considerable zest.

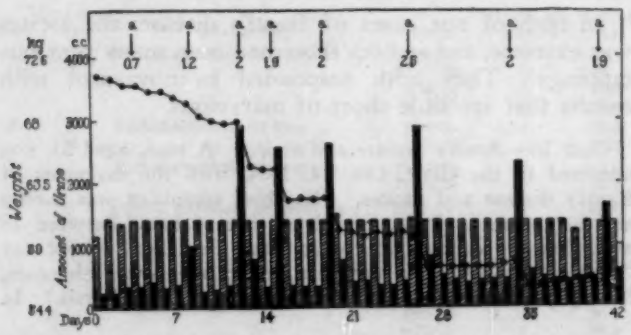

Chart 2 (Case 16).—Fluid balance, diuresis and weight loss under novasurol: a, cubic centimeters intramuscularly.

Reports from the patient's local physician three months later indicated that there existed a constant tendency for the abdominal fluid to recollect. However, a weekly injection of novasurol sufficed to prevent the development of edema and ascites. Subsequently, the patient visited Europe and while there consulted Müller and Wenckebach, who advised against operation. In a letter received June 15, 1925, the patient stated that he was quite recovered, in excellent physical condition, and in need of no further medication.

RESULTS IN SYPHILITIC CIRRHOSIS

Novasurol has been utilized in several cases of ascites associated with syphilis of the liver by O'Leary.

CASE 12.—*Syphilitic cirrhosis.*—A man, aged 50, was admitted to the clinic, Sept. 16, 1919, complaining of a pain in the pit of his stomach, and of having had sour eructations after meals for two years. The serum Wassermann reaction was positive. A diagnosis was made of aneurysm of the aortic arch, and tertiary syphilis. He was seen again in April, 1920; November, 1920; June, 1921; February, 1922, and February, 1923. His condition was fairly good until March, 1924, when he returned complaining of a brassy cough and considerable dyspnea on effort, which had begun with a left-sided pneumonia a year earlier. The cords showed no lesion or evidence of paralysis at that time. There was no edema of the extremities. The aneurysm of the aortic arch could be outlined by roentgen rays. On the last examination, April 7, 1925, he stated that he had felt well until March 1, 1925, when he began to feel below par, and noted a fulness in the abdomen. The legs became edematous, and there was moderate dyspnea.

Physical examination revealed ascites 4, with marked abdominal collateral circulation. The heart measured 18 cm. in the fourth interspace, and there was a dilated arch with systolic and diastolic murmurs at the base. There was slight edema of the lower extremities.

A diagnosis of aortic aneurysm with myocardial degeneration, and syphilitic cirrhosis with ascites, was made and the patient was admitted to the hospital. Ammonium chlorid and novasurol were given with a resulting diuresis, after which there was considerable improvement (Chart 3). Because of nausea, the ammonium chlorid was discontinued and the novasurol repeated, with a loss of 18 pounds (8.2 kg.) in three days. Tests of hepatic function at this time showed dye retention 3, latent jaundice, and serum bilirubin 2.4 mg. The patient was given seven injections of novasurol during the following month, with a fair response on each occasion. He had lost 30 pounds (13.6 kg.), but was still not entirely free from edema. The abdomen was still very prominent, and there was slight distention of the lateral veins. There was ascites 3. The specific gravity of the urine was 1.020; it was acid in reaction, and the urine contained albumin 1. The hemoglobin was 55 per cent.; the erythrocytes numbered 3,090,000, and the leukocytes 3,500. The phenolsulphonephthalein return in the urine was 55 per cent. in two hours. The blood urea was 43 mg.; creatinin, 3.8 mg.; uric acid, 4.9 mg., and chlorids, 580 mg. for each 100 c.c. of blood. The carbon dioxid combining power was 56 per cent. by volume, and acid hemoglobin 14 gm. per cent.

The patient was placed on a weighed diet, low in salt and containing 800 c.c. of fluid with 600 c.c. of additional fluid, and was given 10 gm. daily of ammonium chlorid in capsules. Under this combined treatment, a further loss of 15¼ pounds (6.9 kg.) was effected in eight days. On being sent home, he was given the low salt diet with restricted fluid intake, Blaud's pills, and tonic remedies, and was told to pay special attention to rest and exercise. A note received June 18, 1925, indicates that there is a slight tendency for the fluid to recollect.

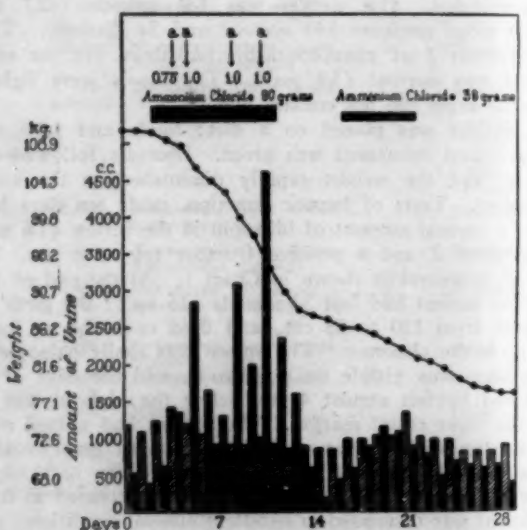

Chart 3 (Case 12).—Fluid balance with combined use of ammonium chlorid and novasurol: a, cubic centimeters of novasurol.

RESULTS OF TREATMENT OF ASCITES AND EDEMA IN CASES OF PORTAL CIRRHOSIS WITH MYOCARDIAL AND RENAL INVOLVEMENT

CASE 18.—*Portal cirrhosis with myocardial and renal involvement.* A man, aged 63, who came to the clinic, Jan. 20, 1925, complained chiefly of discomfort due to fluid in the abdomen. His present illness came on gradually. In November, 1922, slight edema of the extremities was followed by ascites. There was no preceding dyspnea, palpitation or cardiac distress. Paracentesis was performed on eight different occasions, from about 8,000 to 10,000 c.c. of rather

dark colored fluid being removed at each tapping. The relief obtained by these aspirations lasted only about five or six weeks. During the last year, the patient had been treated at Clifton Springs, by means of calcium chlorid, and had lost 70 pounds (31.8 kg.) in four weeks. He had continued this medication until six weeks before coming to the clinic. At that time, because of marked pruritus, the calcium chlorid was discontinued. He also became careless in his diet and gradually regained his former weight and girth.

At the time of admission, the patient's weight was 244 pounds (111 kg.). There was marked ascites, and none of the abdominal organs were palpable. There was considerable edema in the sacrolumbar region and the lower extremities, but none in the upper.

The urine showed a specific gravity of 1.030, a faint trace of albumin, and occasional hyaline and granular casts. The blood urea was 54 mg. and the creatinin 2.2 mg. for each 100 c.c. The hemoglobin was 70 per cent.; the erythrocytes numbered 3,800,000, and the leukocytes 5,200. The blood Wassermann reaction was negative. Tests of hepatic function showed dye retention 4 and serum bilirubin 2.1 mg. The electrocardiogram showed auricular fibrillation, a right ventricular preponderance, and inverted T wave in Leads I and II. The roentgenogram showed a maximal cardiac enlargement with apparently slight dilatation of the aorta. The diagnosis was portal cirrhosis, myocardial degeneration, and chronic nephritis.

The patient was put on a controlled low-fluid, low-salt diet consisting of 40 gm. of protein. Ten grams of ammonium chlorid was administered daily in capsules. Small doses of novasurol (from 0.75 to 1.5 c.c.), given intravenously every four days, resulted in marked diuresis. The patient lost 85 pounds (40.9 kg.), as shown in Chart 4, and at the time of his dismissal, April 1, 1925, was entirely free from ascites and edema, and felt very well. The edge of the liver could now be felt 8 cm. below the right costal margin. The patient was very active and able to walk several miles every day. On dismissal, he was advised to continue the same regimen, to take a diet of 2,000 calories with 50 gm. of protein, and 1,000 c.c. of extra fluid. A report received three months after dismissal states that there had been no return of symptoms, and that his weight is 157 pounds (71.4 kg.).

In this case, there were three possible etiologic factors for the edema and ascites—myocardial degeneration, cirrhosis of the liver, and renal insufficiency—all of which were definitely present. The fact that novasurol was so efficacious indicates that not one of these conditions per se contraindicates its use.

RESULTS IN PICK'S DISEASE, OR CHRONIC POLYSEROSITIS

CASE 17.—*Chronic polyserositis.* A girl, aged 20, came to the clinic with anasarca, and was admitted as an emergency case.[16] Her chief complaints were dyspnea, palpitation, fatigue and anasarca. Her present illness was insidious in onset, beginning two and one-half years before, with menstrual changes and loss of weight. Menstruation became irregular and scanty, and finally disappeared nine months before admission, at which time edema appeared for the first time. She also noted precordial distress and palpitation on exertion. In April, 1923, she had two attacks of hemoptysis, about 200 c.c. of blood being lost each time. Subsequently, the precordial distress was more pronounced, and medical advice was sought. At this time, she was in the hospital for two months, and irregular fever was noted. She lost her voice, as a result, it was thought, of involvement of the recurrent laryngeal nerve. Her heart was extremely large. The condition was diagnosed pericarditis with effusion. She was tapped five times, and on one occasion 1,500 c.c. of straw-colored fluid was removed, supposedly from the pericardium. Guinea-pig tests were negative. Following this, she improved markedly until February, 1924, at which time she noted that the upper part of the abdomen was becoming bloated. This persisted, and later the lower extremities became edematous, and she became extremely dyspneic. There was a hacking cough, and some expectoration. The urinary output was decreased. Fluids were restricted, but there was no deprivation of salt.

On admission, the patient was dyspneic and had a pasty complexion, and there was obvious edema of the face. She had typical watch-crystal nails, an injected throat and small tonsils, also prominent cervical veins. The chest was asymmetrical. There was dulness to percussion over both apexes, with limited respiratory movement and breath sounds more marked over the left lung. The right side contained a moderate amount of fluid. The left side of the chest showed moist crackles throughout. The heart was large, extending 12.5 cm. to the left, and 5 cm. to the right at the fourth interspace. The abdomen was distended, and the liver showed enlargement 4, extending almost to the umbilicus. There was fluid in the flanks, and edema 3 of the extremities extending to the thighs. The heart sounds were distant. A roentgenogram of the chest showed a dense thickening of the pleura at the left base. Fluoroscopy revealed no evidence of peri-

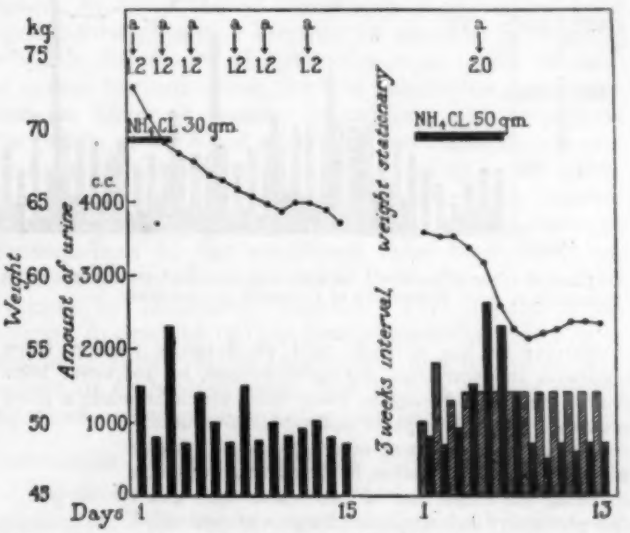

Chart 4 (Case 18).—Fluid balance with combined use of ammonium chlorid and novasurol: *a*, cubic centimeters of novasurol intravenously.

carditis with effusion or pericardial adhesions. The urine was small in quantity, about 150 to 200 c.c., with albumin, trace to 2, and occasional hyaline casts. The phenolsulphonephthalein excretion was 35 per cent. in two hours, and the blood urea was 13 mg. for each 100 c.c. The hemoglobin was 76 per cent.; the erythrocytes numbered 4,100,000, and the leukocytes 5,200. Repeated analyses of the sputum revealed no tuberculosis. The Wassermann reaction was also negative. The stools gave a positive benzidin test for blood. An electrocardiogram showed inversion of the T waves in Leads I, II and III. The diagnosis was made of Pick's disease, general anasarca with ascites, hydrothorax, probably hydropericardium, chronic enlargement of the liver, and possibly chronic passive congestion of the kidney.

The patient was placed in bed with a back rest, put on a Karell diet, and treated with digitalis. The systolic blood pressure was 100, the diastolic 70. The weight was 137½ pounds (62.5 kg.) and was reduced to 130 pounds (59 kg.) under this regimen. At this time, ammonium chlorid, 8 gm. daily, was given by mouth, and novasurol was administered four days later. The course of events under this ammonium chlorid and novasurol treatment is shown in Chart 5. This treatment was continued for a month. The patient received in all eight doses of novasurol. Diuresis was pronounced following each injection. On some occasions, the fluid output reached from 2 to 3 liters. The weight was reduced from 137 to 97 pounds (59.2 to 44.5 kg.). On dismissal, the patient had lost every trace of edema. She had been on a weighed,

16. The patient's physician, in his letter of reference to the clinic, stated that the anasarca was of a most obstinate type and had resisted all forms of treatment.

low-fluid, low-salt diet of 2,000 calories with 400 c.c. of extra fluid daily, and she was advised to continue this after leaving the hospital.

RESULTS IN AN UNUSUAL CASE OF POLYCYTHEMIA, ASCITES AND HYDROTHORAX COMPLICATING MYOCARDIAL INSUFFICIENCY [17]

CASE 20.—*Polycythemia and myocardial insufficiency.* A man, aged 35, admitted to the clinic, May 21, 1925, complained of distress in his stomach, and of dyspnea. Aside from diphtheria and scarlatina during childhood, he had never been ill until he had influenza in 1918, from which he made a good recovery. About five years before his present illness, he had had frequent severe epistaxis. About two years before admission, he first noticed dyspnea following the extraction of two teeth. His gums bled profusely, and the hemorrhage was controlled with difficulty. His condition returned to normal in about a month. During harvest time in 1924 he again became dyspneic, and in November he contracted a severe cold, and his condition become progressively worse. He had also a bad cough, and some mucus in his throat. Later, his abdomen became distended and caused him considerable discomfort. Just prior to his admission, he had been in bed on a Karell diet for six weeks, with no benefit. He had noticed recently a gradual diminishing urinary output.

When the patient arrived at the clinic, there was moderate edema of the feet and ankles, and he complained of a dull pain in the right upper abdominal quadrant. He was definitely orthopneic and edematous. There was no striking enlargement of lymph nodes. There was slight pulsation in the veins of the neck. The heart beat was regular, and the organ measured 3 cm. to the right and 12.5 cm. to the left in the fourth interspace. There was a visible and palpable impulse in the sixth space, with a suggestion of a thrill, and a definite diastolic rumble over the apical region. The lungs were clear, except for an area of definitely impaired resonance at the right base, and a few crackling râles at both bases. The liver seemed enlarged on percussion, but the edge could not be definitely felt on account of the ascites. There was peripheral sclerosis 1 to 2. The blood Wassermann reaction was negative.

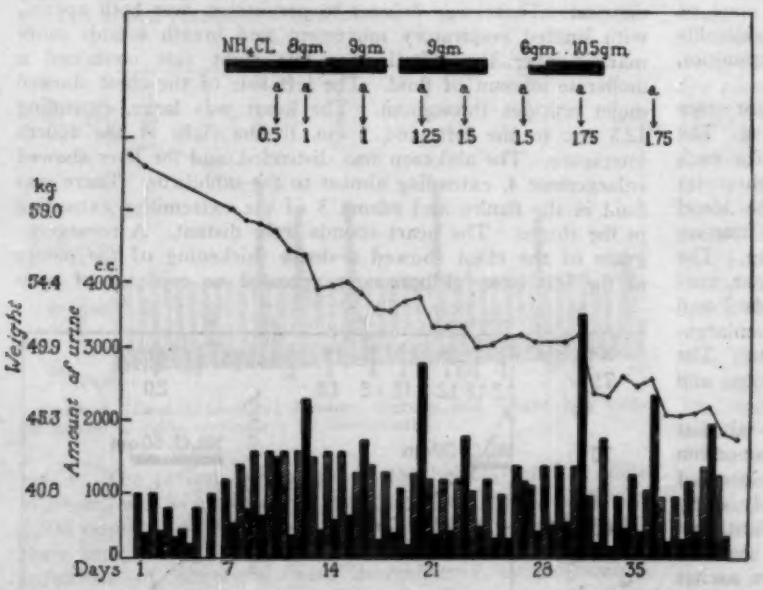

Chart 5 (Case 17).—Fluid balance with combined use of ammonium chlorid and novasurol: *a*, cubic centimeters of novasurol intravenously.

The urine contained a slight amount of albumin and a few hyaline casts; the specific gravity was 1.025. Repeated examinations of the stool showed no parasites or ova. The phenolsulphonephthalein return was 65 per cent. The hemoglobin was 80 per cent.; the erythrocytes numbered 5,600,000, and the leukocytes 8,100. The differential count showed eosinophils varying from 13 to 39.1 per cent. The blood volume was high, 144 c.c. for each kilogram of body weight, and the hemoglobin was 23 gm. per cent. by the acid hematin method. An outstanding feature of the blood picture was the large number of eosinophils. The nonprotein nitrogen was 60 mg. for each 100 c.c., although the blood urea was only 20 mg.; the creatinin was 1.4 mg., and uric acid 6.6 mg. The amino-acid nitrogen was 11.9 mg. A culture of the blood gave no growth on brain broth or blood agar in forty-eight hours. Tests of hepatic function showed dye retention 2 and serum bilirubin 1.59 mg. Roentgenograms of the chest disclosed a slight amount of fluid in the right base. The culture of this fluid was negative. The electrocardiogram showed sinus tachycardia, right ventricular preponderance, notched T wave in Leads I, II and III, and diphasic T wave in Derivation III.

The patient was first treated with digitalis, but did not respond well. Later, he was given ammonium chlorid and the weighed diet, with little or no effect. He was given novasurol three times along with the ammonium chlorid, with a definite diuresis on each occasion. There has been considerable subjective improvement with the relief from the abdominal tension, and the clearing of his hydrothorax. On dismissal, the patient was free from edema (Chart 6).

The gross results in regard to diuresis and weight in the entire series are shown in the tabulation.

COMMENT

The results obtained from the use of novasurol in this series of cases are unquestionably better than we have observed in similar cases with other methods of treatment. Ascites and edema, which have resisted other measures in many instances, have promptly and completely yielded to the regimen here presented.

The restriction of water is indicated and of undoubted value, and raises the question of the advisability of forcing the water intake in cases of cirrhosis of the

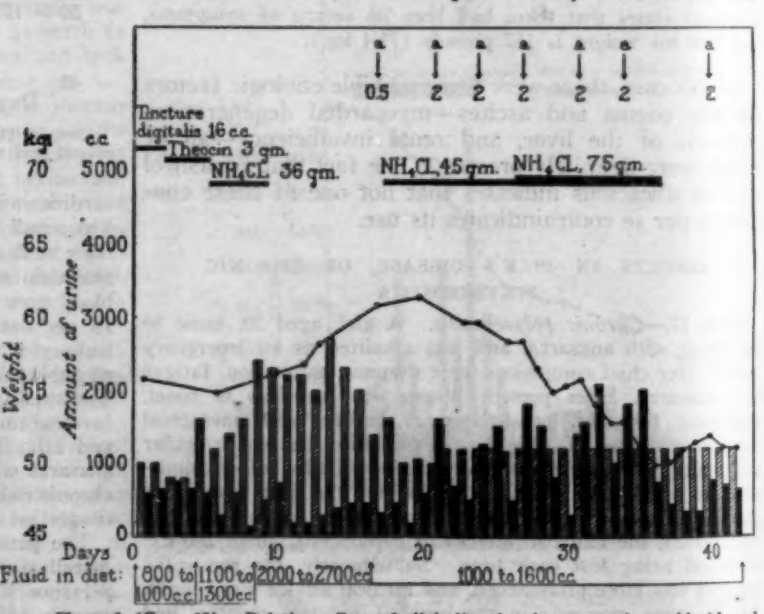

Chart 6 (Case 20).—Relative effect of digitalis, theocin, ammonium chlorid and the combination of ammonium chlorid and novasurol.

17. The diagnosis of polycythemia can be established reasonably well, although the number of erythrocytes does not reach the upper limits of normal, and the hemoglobin by the Dare method is so much less than by the acid hematin estimation.

liver prior to the appearance of ascites, a practice advocated in some of our leading textbooks of medicine. The low-fluid, low-salt diet is also an important consideration. Recent work in the field of edema emphasizes the importance of the part played by sodium, and thus knowledge of the sodium intake and its restriction is obviously important. The restriction of sodium is more important than the restriction of chlorids, since diuresis results and edema disappears under the forced administration of chlorids, as the ammonium salt. Ammonium chlorid in itself is a powerful diuretic, in this connection excelling calcium chlorid in the treatment of edema. Finally, novasurol is one of the most potent diuretic agents ever introduced into medicine. By itself, it is often capable of increasing the urinary output in a most striking manner. If success is lacking or only partial, its action is usually strikingly enhanced by the adoption of a low-fluid, low-salt diet and the administration of ammonium chlorid.

The results from novasurol have been consistenly good, except in three instances. In one case (Case 4), diagnosed hepatic (biliary) cirrhosis with splenomegaly and ascites, diarrhea resulted together with a slight increase in the preexisting jaundice. However, the patient had previously suffered from colitis and dysentery, with suspicious organisms in the feces. Despite definite diuresis, and a decrease in the ascites with the loss of 11 pounds (5 kg.), the treatment was not considered successful. A second patient with portal cirrhosis (Case 7) lost 10 pounds (4.5 kg.) in the course of two weeks, with moderate diuresis on each of four occasions following the injection of novasurol. However, the fifth injection failed to induce diuresis, and an effort was made to administer ammonium chlorid both by mouth and intravenously, but it could not be tolerated so that resort was had to paracentesis. In a third case, entire lack of cooperation precluded a satisfactory trial of the drug.

Concerning permanence of results, little can be said. In every instance in which ascites was entirely controlled, the results have been far beyond our expectations. In some instances, there has been a tendency to recurrence of ascites and edema subsequently, but this has been controlled by the use of novasurol at intervals of from one to two weeks or more. In other cases, the edema has entirely disappeared, and has shown no tendency to recur.

With the clearing up of ascites in portal cirrhosis, the general health and strength are markedly improved, the abdominal collateral channels disappear almost entirely, and the patient passes from a condition of serious illness to one closely approaching normal. This confirms the results reported by Fudor and Bleyer. In view of certain previous experiences reported in the literature, that is, the lack of effect, or actual harm, in some cases of cirrhosis of the liver, it is obvious that great care is necessary in following the course of events in such cases while treatment is being given. Whereas novasurol, ammonium chlorid or the low-salt diet alone may fail, their combination may effect excellent results.

These results in the treatment of ascites with novasurol have a special interest in view of the current theories of the cause of edema. They certainly argue against a purely mechanical cause. No constant changes in blood pressure have been demonstrated during or following the administration of the drug. It would appear, therefore, that changes of a physicochemical nature, probably affecting the cellular colloids, are responsible for the ascites and edema. It may be that sufficient attention has not been paid to the normal water excreting function of the liver.

These results indicate that ascites of hepatic disease, particularly that of cirrhosis, can usually be adequately controlled by medical measures.

THE PHENOMENA CONCERNED WITH "REACTIONS" FOLLOWING THE TRANSFUSION OF BLOOD

CLINICAL AND EXPERIMENTAL OBSERVATIONS *

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AND
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Clinically, it is recognized that the intravascular introduction of blood to a subject from an individual of homologous species is a therapeutic procedure of first rank. At times, blood transfusion may be the only agency through which life may be saved or prolonged.

While differences of opinion exist as to the method of choice in transfusion, there is unanimous agreement that the factor of greatest importance, with respect to the results, is the blood itself. In this viable fluid tissue lie the potentialities for clinical betterment or for harm. Numerous contributions have emphasized the benefits that have followed blood transfusion.[1] The harmful consequences of the procedure have been dwelt on indifferently by clinicians and in incomplete or detached fashion by laboratory workers. Our report is an attempt to describe (*a*) the type of unwished-for events that may follow blood transfusion and to discuss the nature of such phenomena, and (*b*) to suggest means by which undesirable sequelae may be avoided.

RESPONSES OF RECIPIENTS TO BLOOD TRANSFUSION

The procedure is either beneficial or harmful. Consequent on a successful transfusion, the subjective and objective evidences of well-being and of increased physical and functional efficiency are readily demonstrable. Transfusion to counterbalance massive blood loss, from whatever cause, is accompanied by the most striking and permanent benefits. When the ailment treated is an organic, metabolic, septic affection or a hematologic dyscrasia, though the immediate transfusion response may be satisfactory, the persistence of that result may be brief. It cannot be foretold. Quite often, the subject's condition is better out of all relation to the volume of blood transfused. Again, large transfusion volumes may not be followed by proportionate improvement. Something more fundamental than what is covered by mere increase in blood volume by transfusion requires explanation before one can understand the mechanism that controls responses.

Before describing undesired transfusion responses, it would seem advisable to note why the classification given below has not been generally recognized. Descriptions of the recipient response vary noticeably.

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the authors' reprints.

* Read before the Section on Pathology and Physiology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Hunt, J.: Collected Papers from the Mayo Clinics, Philadelphia, W. B. Saunders Company, 1919, p. 672. Pemberton, J.: Ibid., p. 540. Stetson, R. E.: Am. J. M. Sc. **168**: 534.

With the possible exception of reports on the acute, or what is commonly called the hemolytic, reaction, post-transfusion phenomena have been considered loosely. Wide discrepancies occur in the communications of scattered observers and even in those from different men working in the same institution (Hunt,[1] Pemberton,[1] Unger,[2] Lindeman[3] and Bernheim[4]). Study of the reports shows quickly that the variations in records are due to clinicians and laboratory workers endeavoring to apply the same language to different observations or different language to factors that essentially are similar. If one regards transfusion as a biologic, immunologic, chemical and clinical experiment, analysis of the reports of recipient response phenomena indicates that often the experiment has lacked all controls; the agents interacting were dissimilar as to kind and quantity; apparatus, time, environment, technical skill, etc., all differed; and yet, a like answer to the problem was expected or, if not secured, was explained away by theory, which theory quickly became the parent of many equally unproved corollaries. The effects of whole blood are compared in relation to citrated, salted or defibrinated blood; with blood at body temperature, or cooled, or refrigerated and later heated; with blood directly passed from vein to vein, or through cannulas, needles, mixing chambers, valves, stopcocks, rubber, glass or metal tubes or cylinders; with blood exposed to air and mechanical trauma and blood not so changed; small volume transfusions (at hourly, daily or weekly intervals) are compared with large volumes, given rarely or frequently—and, in each instance, the blood given may or may not have been physically, chemically or biologically changed from normal. One can multiply almost endlessly the factors that have made it impossible to arrive at a correct appraisal of reaction phenomena, or to compare the results from one set of observers with those of another. It is evident that, not infrequently, so-called reactions in recipients are in no wise due to the effects of transfused blood, as such, and to that alone. Certainly, one should discuss transfusion responses only when all phases of the work are controlled and when the operation concerns itself with the fewest possible sources of error.

The experience with blood transfusion of one of us (F. S.) extends over the last eleven years. At the beginning of the work, there were tried out and discarded all the transfusion methods that were concerned with blood altered from the state in which it flowed from the veins of donors. We felt that, difficult though the problem might be, in order to get all possible advantage from the procedure, one should endeavor to introduce nothing with the blood that was not a normal constituent of it. Therefore, all our transfusions have been made with whole blood. The medium of blood transference has been Percy's ingenious modification of the paraffined glass cylinder, orginally suggested by Kimpton. Thus, we have worked with errors reduced to a minimum and have secured results which are, at least, comparable. The variables still remain, as they will always, the bloods of the donors and the bloods of recipients as they may be biologically or chemically affected by various ailments.

2. Unger, L. J.: Deleterious Effect of Sodium Citrate Employed in Blood Transfusion, J. A. M. A. 77: 2107 (Dec. 31) 1921.

3. Lindeman, E. E.: Blood Transfusions Without Chill by Syringe-Cannula System, J. A. M. A. 72: 1661 (June 7) 1919; Total Blood Volume in Pernicious Anemia, ibid. 70: 1292 (May 4) 1918.

4. Bernheim, B. M.: Whole Blood Transfusion and Citrated Blood Transfusion, J. A. M. A. 77: 275 (July 23) 1921.

DISCUSSION OF POST-TRANSFUSION RESPONSES

Harmful sequelae to blood transfusion have been manifested to us in three forms: (1) the acute and fulminant; (2) the delayed, not rarely, a disturbance acutely arising, and occasionally violent; (3) the systemic or constitutional, a malfunction, usually febrile, and associated with renal, cardiac, neurologic or gastro-intestinal phenomena.

1. *The Acute (Hemolytic) Recipient Response.*—Previous to the fundamental observations of Guthrie and Huck,[5] our donors were selected successively by the Rous-Turner, Moss, Brem-Moss and, lastly, the Vincent methods of typing. During the experimental period, more than 800 whole blood transfusions were performed by our colleagues and us. Since Guthrie and Huck's report on the limitations of the four group typing, we have selected donors, not only with respect to their positions in the Brem-Moss classes, but also on the basis of their agglutinin-agglutinogen content with prospective recipients (cross-grouping; direct matching). Fifty-four transfusions have been performed with this added donor control. It is a significant tribute to the work of Guthrie and Huck that we have seen no acute, hemolytic recipient responses since we adopted their procedure.

The acute reaction varies in severity directly with the volume of unsuited blood given, but there seem to be minor factors which aggravate the violence and duration of the response. The rate at which blood is introduced, the total time blood has been out of the donor before it is administered, the cooling of blood below 97 F., its exposure to air leading to thrombin formation, the physical blood alterations of preclotting character, and tissue or cell traumas conducive to platelet clumping and to microscopic clots, all appear to be causes capable of producing intense response. Our work indicates that incompatible blood given to a subject in good general shape but affected with an advanced, secondary anemia excites reaction of a degree far greater and more immediate in occurrence than when the recipient is ill from a primary blood dyscrasia or a disease of serious, organic nature. In the latter circumstance, it would seem that not only are protective serum substances deficient in their power to agglutinate and to break up foreign red cells and to split the introduced serum proteins, but liver, heart, kidneys and central nervous system are mechanically or physiologically limited in their capacity to take care of a large volume of cell suspension, suddenly introduced, or quickly to metabolize or eliminate a great quantity of toxic derivatives necessary to establish the pretransfusion balance of body fluids and of tissue function. Thus, it may occur that the foreign blood is successfully split, as would be any foreign protein introduced, but the outcome with respect to function or life lies in the physiologic integrity of those organs which have to do with the distribution, storage, ultimate cleavage and excretion of the alien substance. In the cachectic, or those whose vital tissues are damaged, the task imposed is often beyond the capacity of essential organs, and death is rapid.

It becomes plain, therefore, that the acute or hemolytic recipient response to blood transfused embraces two phases:

(*a*) In the first, the corpuscles of the introduced blood are rapidly agglutinated preliminary to their lysis. What changes follow in the donor's serum on

5. Guthrie, C. G., and Huck, J. G.: Bull. Johns Hopkins Hosp. 34: 37 (Feb.), 80 (March) 1923.

this agglutination, we know little. Whether the donor serum mixes harmoniously with that of the recipient and then aids in the destruction of the agglutinated "foreign" cells or whether the donor cells, as they are agglutinated, disturb the colloidal balance of the donor serum and so render that serum just so much foreign material to be disposed of after the fashion of the cells, no definite statements can be made. The early and transient appearance of serum proteins in the urine subsequent to certain transfusions would appear to indicate that, in some instances, the donor serum-fraction of blood is excreted but slightly altered after the manner of egg albumin when administered intravascularly, or as are the serum albumins when fluid accumulates in serous sacs of the body. It is possible that donor serum may not crack the colloidal balance of the recipient's plasma, but may persist, unsplit, as a foreign serum and pass, unchanged or slightly modified, into the urine. This is in contrast to the mechanism for taking care of agglutinated blood cells. Some of these are engulfed by leukocytes or are directly cleaved. In either event, the fragmented cells constitute a mass of stroma, mineral, albumin and salts which demands active reduction, segregation, storage and elimination before the pretransfusion balance of the recipient's plasma is restored. The clinical phenomena exhibited as acute or hemolytic reaction are conservative and protective in nature, even though, in the working of this function, the result may be fatal or permanently damaging to the recipient.

The lytic crisis occurring after transfusion may prove quickly fatal. One of our early experiences included an instance in which death followed within ten minutes of a transfusion given as an emergency measure, when there had been opportunity for but limited donor selection and for blood typing of the crudest. The patient was actually drowned in his own fluids, as pulmonary transudate filled the alveoli. No form of therapy was of avail; the water logged heart returned no response to intravenous digitalis preparation in large dose; epinephrin, if it ever reached the capillary bed, excited no constrictor action. Further, our dosage of epinephrin to counteract post-transfusion reactions was much smaller at that time than is now given.

(*b*) The second phase of the acute recipient response to incompatible blood comprises a great variety of clinical, hematologic, chemical and pathologic abnormalities. If the fulminant phase has not caused death, subsequent disability depends on numerous factors. Of these, we would emphasize particularly the character of the ailment for the relief of which transfusion was performed; the volume of alien blood given, and the pretransfusion, functional efficiency of such organs as the liver, heart, kidneys, blood making tissue, central nervous system and the lungs.

It should be recognized that during the second phase of the acute lytic response the recipient is urgently confronted with the problem of mechanically accommodating a 20 per cent. increase in blood volume, of metabolizing or storing at least an equal percentage of cells (and, probably, serum split products), and of eliminating, by several avenues, a quantity of useless or harmful material suddenly acquired. To essential organs, the demands on physiologic reserves are immediate and extensive. Since, in health, we have only crude and inaccurate methods available for the determination of physiologic reserve, it is quite evident that, when a subject is affected with a dysfunction sufficiently serious to require blood transfusion, the question of functional reserve becomes vital. Death of normal human beings or of experimental animals from specific anaphylactic shock is not an uncommon happening. Such termination is proof of how quickly physiologic reserve may become exhausted. This analogy indicates the possibilities for embarrassment when organs, already damaged by disease or prolonged anemia, are called on to meet the emergency created by a foreign protein material equal to a fifth or a fourth of the subject's own blood proteins. The recipient may be well able to survive the acute vascular crisis associated with lysis, but later may succumb to the metabolic or eliminative load that burdens the kidneys, liver or central nervous system—organs that have been deficient in functional capacity previous to transfusion, and that are further handicapped by the capillary phenomena arising at the immediate transfusion response. Thus it follows that, during the desperate attempt to restore the pretransfusion balance (body fluid and tissue), one or more of the essential organic systems may cease wholly to function. Depending on which basic system fails earliest, the clinical and laboratory pictures of the events vary subsequent to the lytic crisis. So also, do the duration of life, the possibilities of ultimate recovery or the extent of permanent pathologic damage. The recipient may live a few hours or may remain alive but in desperate condition, as did one of our subjects, for as long as twenty-three days.

Before leaving the consideration of these recipient response phenomena, a late skin observation might be recorded. One of our patients, who lived rather more than three weeks subsequent to transfusion and lysis, exhibited huge urticarial wheals about eight days following the operation. These were very annoying on account of itching; they persisted several days. Their disappearance was followed by extensive skin exfoliation. The picture in all respects resembled that common to specific anaphylaxis, e. g., horse serum. We suggest that these dermal anomalies actually are anaphylactic and specific. Ashby[7] has shown that transfused blood cells may live as long as thirty days; their resistance increases with age, and when certain fractions of serum albumin bathe them. We consider that, even when incompatible blood is transfused, older cells are lysed with more difficulty than are younger cells. As Ashby has shown, in particular circumstances, agglutination may protect from ready hemolysis. It has appeared to us that the primary lysis of transfused blood, in the patient mentioned, was a destruction of younger red cells, or, at any rate, some cells escaped lysis. As time passed, the recipient's serum can be assumed to have developed its lytic ability for red cells to a degree even greater than that exhibited when the cells of the incompatible blood were first introduced. In such event, we regard the late skin changes as representing a lysis of older transfused cells or of such cells as escaped the immediate post-transfusion attack. This second manifestation of lysis represents an anaphylaxis; i. e., specific destruction of the red cells of the donor. We do not consider these phenomena an evidence of an autohemolysin, because there is no proof that the recipient had ever shown such characteristic dermal manifestations during his pretransfusion course; the phenomenon is only evidence of an autohemolysin in the sense that it arose and was exhibited after donor cells had been resident some days in the recipient's serum. This delayed, lytic manifestation

7. Ashby, Winifred: Am. J. Physiol. **68**: 239 (April), 250 (April), 585 (May), 611, 1924.

assumes the character of anaphylaxis against the donor's cells, which, apparently, have been aroused as a sensitization phenomenon excited by alien red cell proteins accumulating after the first erythrocyte cleavage.

Hematologically, the acute lytic reactions are characterized by: delayed coagulation time; lower specific gravity of blood; fall in red cell count to a figure usually lower than pretransfusion count; drop in the leukocyte count, frequently from two to four thousand less than the pretransfusion white blood cell count (this in contrast to the effects on the blood of a successful transfusion, in which event the post-transfusion leukocyte count is usually from two to four times greater than it was before the transfusions); striking reduction in blood platelets; a lowered polynuclear ratio; an increased lymphocyte count, and the early appearance of nucleated cells. If the patient survives the acute lytic response, after twenty-four hours, the red cells begin to increase, the lymphocytes decrease, platelets reappear, clotting time is reduced, poikilocytosis is less marked, and, in the event that one is not dealing with an aplastic bone marrow, blast cells persist or appear. Particularly in the so-called pernicious or hemolytic anemia, in the past, have crises of blast cells been looked on as indicative of an early termination. However, our experience in the treatment of severe anemias by whole blood transfusion leads us to regard the appearance of blast cells following transfusion as a rather favorable omen; the presence of these cells at least indicates that we have to deal with a marrow still capable of red cell manufacture, rather than an aplastic marrow incapable of producing new red cells in an emergency. To be sure, these blast cells are not so functionally efficient as are matured corpuscles; but, in the circumstances, the partially functioning cell is better than no cell.

While a successful transfusion is followed by less frequent heart rate, elevation in blood pressure and diminished clotting time, we have observed that, in instances in which the hemolytic crises occurred, there were increased heart rate, a rather sudden drop in blood pressure, lowered leukocyte count and prolonged clotting time. These anomalies occurred even when there was no immediate post-transfusion chill followed by temperature rise. They are most pronounced, however, when the hemolytic response follows immediately on the giving of blood. These post-transfusion phenonmena resemble the Widal crisis [8] of nonspecific shock observed when the barrier of proteopexic function of the liver is lacking or reduced.

2. *Delayed Recipient Responses to Transfusion.*—In this group we class such reactions as do not follow immediately, or within a few minutes after, introduction of donor's blood. This type of response usually appears within from one to four hours after the transfusion. Obviously, the mechanism of this reaction differs from the lytic crisis occurring during or closely related to transfusion. It is difficult to conceive of a condition in which the unsuited blood circulates for more than an hour, and yet, if the mechanism of response is similar to that of our Class 1, the donor's red blood cells are carried about in agglutinated form and yet not broken up. It is an undisputed fact, however, that as much as a thousand cubic centimeters of blood seemingly typed correctly may, in certain instances, be given, the operation finished, the patient apparently greatly benefited, and then this favorable outcome be reversed without warning. The subject then passes through experiences in every way comparable to those observed in the acute "hemolytic" crisis. The following case illustrates the leading features of this delayed response:

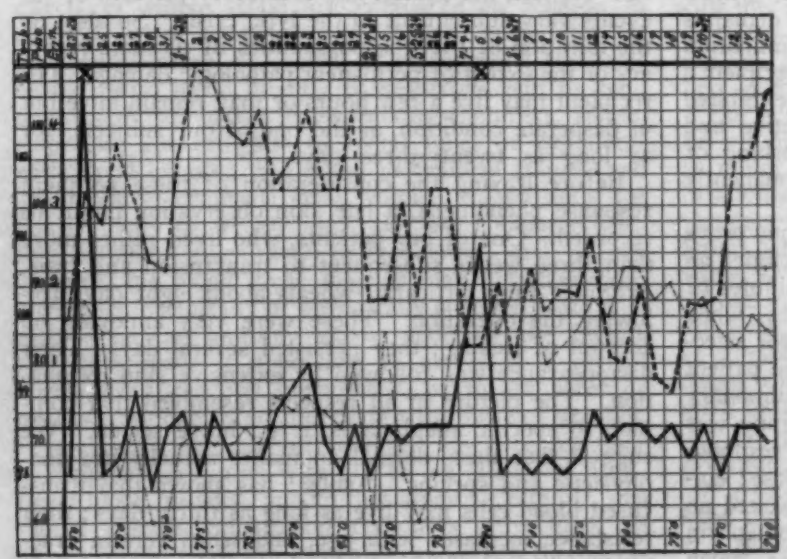

Fig. 2.—Constitutional response and red cell count variations occurring in association with a transfusion of whole blood in a case of hemolytic (Addison's) anemia when Moss-Brem groupings were satisfactory but when cross-grouping had not been performed. The absence of reactions at the several other transfusions may be noted. Solid line, temperature; broken line, erythrocytes; dotted line, pulse.

A man, aged 59, affected with hemolytic (pernicious) anemia, of Group 4 (Moss-Brem classification), with a temperature of 98.6, pulse 92, respiration 14, was given 750 c.c. from a Group 4 donor, not tested for agglutinin or agglutinogen by cross-grouping. The transfusion was in every way satisfactory until an hour following the operation, when there were sudden, severe rigor and exhausting chills, each chill lasting about thirty minutes; there was no backache or dyspnea, but considerable nausea and great prostration. About two hours following the transfusion, the patient's respiration was 14, pulse 84, temperature 103; there was no blood-derived pigment in the urine. Erythrocytes before the transfusion were 1,064,000; leukocytes, 6,200; after transfusion, erythrocytes, 2,450,000. The condition persisted for several hours; the temperature then fell by lysis during two days; nausea and weakness disappeared, and the white cell count approached pretransfusion figures. Three weeks later, a laparotomy was performed, at which time the gallbladder, appendix and spleen were removed. Our subsequent transfusions were followed by no untoward responses, and the patient rapidly gained strength and vigor. A year later, the erythrocytes numbered 1,200,000; the patient was extremely weak; his heart dilated; there were blood-derived pigments in the urine; constant nausea; albumin and casts in the urine, and the urine output was scant. A Group 4 donor was cross-grouped with the recipient's blood. The cross grouping showed a very slight degree of agglutination of the patient's cells by the donor's serum, but in the emergency, this blood had to be used; 700 c.c. was given. Approximately one hour after what had seemed to be a successful transfusion, a severe chill occurred; it lasted twenty-five minutes and was followed by temperature rise to 100, respirations of 20. No blood-derived pigments appeared in the urine; the erythrocyte count eighteen hours after transfusion was 2,100,000; the general condition was markedly improved. Without further reaction, six transfusions were subsequently given (Chart 2).

8. Brown, T. R.: Ann. Clin. Med. 1: 380, 1922.

Analysis of this case (typical for the group) demonstrates that the so-called delayed "reaction" is not a hemolytic process, even though, roughly, it resembles such and often is so considered. It differs from a lytic crisis in that the erythrocytes are definitely increased by transfusion and the increase is maintained; blood-derived pigments are not found in the urine; clotting time is not delayed; heart rate is reduced; no petechiae, purpura or oozing from mucous surfaces is observed, and the patient experiences the well-being common to successful blood transfusions after the first twelve hours have passed.

While this recipient's response varies definitely from that due to acute hemolysis, it resembles the manifestation when a foreign protein, as horse serum or other alien albumin, is administered to an individual sensitized to it. Several explanations may be advanced for this type of reaction. It commonly occurs in individuals who harbor bacterial foci (in the biliary tract, lung tissue, wall of the intestine, etc.). In such circumstances, we have considered that these delayed responses represented bacterial cleavage or protein cleavage of damaged tissue at a bacterial focus, caused by the donor's blood increasing the protective, bacteriolytic or protein cleavage power of the recipient's serum. In this event, the reaction appears to be a manifestation of parenteral protein splitting. That something of this nature occurs is demonstrated by rapid healing of the injured tissue or of visible surface foci of infection (varicose ulcers, boils, etc.) following transfusion. Variation in time of appearance of the recipient's delayed response (from one to twelve hours) would seem to indicate that the rate at which bacterolytic or protein cleaving agents accumulate in the blood and of strength to split different strains of bacteria is not fixed. Bacteria may vary in their resistance according to their type, number and locations of growth. If the recipient's serum, previous to receiving fresh normal donor's serum, already contained bacterial lysins, but not of sufficient degree to lyse a considerable number of bacteria, then the addition of a strong lysin, by transfusion, would render effective the combined serums in the recipient more quickly than when a strong donor's serum was added to a recipient serum that was already exhausted by a previous exertion of its lytic power against long established bacterial colonies.

Another explanation of these delayed responses may lie in the fact that, while the combined donor and recipient serum is capable of splitting foreign proteins, such split-products are, in the event that the recipient has normal protopexic liver function, filtered by the liver and do not pass, as partly split protein, to the vascular tree beyond the liver. These split products are disposed of in the normal way. However, should the liver's protopexic function be below normal, the leakage through of various kinds of partly altered protein then results in parenteral cleavage and there occurs nonspecific protein shock (Widal crisis). It would seem possible that the factors of increased bacteriolytic power in the recipient's serum and of deficient liver barrier function may both be present. Certainly, the reaction points to protein cleavage rather than to hemolysis, as shown in the accompanying table.

It was stated that, in the patient cited, the donor's serum slightly agglutinated the cells of the recipient. One might conceive of a condition in which this weak agglutination process gradually took place following the transfusion, and that a subsequent reaction was a cellular lysis. In such event, however, it is difficult to explain why such cell lysis was not followed by the appearance of blood-derived pigments in the urine, in the duodenal extracts or about the peripheral capillaries. Moreover, in this type of reaction, increase in the red cell count following transfusion is maintained, and capillary embarrassment with transudation or purpura is lacking. The patient has no abnormal peripheral sensations or cerebrospinal manifestations. He does well clinically. Indeed, in some instances, this type of reaction seems necessary before the patient regains strength and vigor. From experience, we have come to regard these delayed reactions as conservation phenomena; in special instances, we look for them with the expectation that, after they have occurred, the patient will make a more rapid recovery. In two cases of marked anemia, due to sepsis following abortion, the first three transfusions were followed by delayed reaction of the type described. The subjects improved progressively with each transfusion, despite the shock. Following the fourth transfusion, no untoward symptoms appeared and both patients progressed to an uninterrupted and complete recovery.

However, these delayed recipient responses may be productive of serious consequences. If, previous to the transfusion, there were already present renal insufficiency, cardiac dilatation and myocardial degeneration, with low diastolic blood pressure or alimentary tract disturbances, the shock of the delayed response, together with the necessity for the elimination of toxic by-products of protein cleavage, may lead to fatal termination by exhaustion, heart embarrassment (seemingly of central origin) or to an uremia-like syndrome. One of our patients well illustrates this:

Three whole blood transfusions, at five-day intervals, were in every way successful, and increased the patient's red cell count from 799,000 to 3,900,000. Each successful transfusion was accompanied by increasing tenderness about the gall-bladder and bile ducts, and by slight diarrhea. The renal output was maintained, blood-derived pigment never found, but all specimens exhibited albumin and casts. A fourth transfusion produced what appeared to be marked irritative biliary tract signs accompanied by a scanty urine output, albumin and casts being excessive. Within eight hours following the transfusion, the temperature rose, pulmonary and localized cerebral edema appeared, with delirium; death occurred as the result of urine suppression and respiratory distress seemingly of bulbar type.

Summary of Data Concerned with Four Reactions Subsequent to Transfusion of Whole Blood

Diagnosis	Age	Previous Transfusions	Group	Group of Donor	Before Transfusion: Temp.	Pulse	Resp.	After Transfusion: Temp.	Pulse	Resp.	Amount Transfused, C.c.	Before Transfusion: Erythrocytes	Leukocytes	After Transfusion: Erythrocytes	Leukocytes
1. Hemolytic anemia.....	50	0	4	4	98.6	92	14	103	84	20	750	1,640,000	6,200	2,450,000	5,500
2. Hemolytic anemia.....	..	9	4	4	98	90	20	100	94	20	700	1,300,000	.....	2,100,000	.....
3. Hemolytic anemia.....	45	4	4	4	100	92	28	101.6	120	36	700	2,130,000	19,450	3,150,000	16,500
4. Chronic diffuse nephritis....	64	2	4	4	98	70	18	99.6	70	18	750	4,000,000	7,000	5,000,000	5,100

At no time did this patient exhibit icteroid coloring or blood-derived pigment in the urine or stools. Here, transfusion was successful as a procedure, but the renal elimination of toxic products and the effect of these toxic products in the capillary circulation led to death at a time when the outcome seemed bright.

3. *The "Constitutional" Recipient Response.*—If carefully observed, practically all transfusions are accompanied by a febrile rise of varying degree. The temperature ranges from 100 to as high at 105. The rise occurs within three hours following transfusion and may be maintained for as long as three days. Apart from fever, the patient has no particular discomfort, nor does he exhibit signs suggesting blood destruction even of slow but constant degree. In a patient, who previous to transfusion has no cardiovascular-renal, cord or organic alimentary tract dysfunction, such constitutional reaction has relatively little significance.

Its mechanism is difficult to explain. In the absence of evidences of blood destruction, we have felt that the recipient's responses were caused by bacterial lysis, by the splitting up of some unassimilable serum protein or protein derived from the site of unobtrusive, but nevertheless present points where there was damaged tissue. Only rarely, in this form of reaction, have we found blood-derived pigments in the urine or feces. The red cell count is well maintained. If such reaction occurs, however, in a patient who has liver, kidney or heart damage, in which condition there may be low functional reserve, the transfusion directly may precipitate embarrassment in vital organs and be accompanied by death or at least long continued illness.

We would emphasize the necessity for carefully observing for from two to four days these patients in whom the blood transfusion has seemed successful. If careful observation is carried on, the sudden and unexpected appearance of heart, kidney, liver or respiratory embarrassment will not occur. General and medicinal measures may be instituted before a uremic state or heart failure appears. When evidences of lowered capacity of essential organs is present, further transfusion should be postponed until conditions have approached normal. Certainly, in this type of case, further transfusion should be interdicted so long as the patient is febrile, has nausea and vomiting, is difficult to feed or has the products of blood destruction appearing in definite or increasing quantity in his urine. If transfusion is performed in the face of these cautions, whatever chance of recovery the patient may have had is likely to disappear.

MEANS BY WHICH HARMFUL POST-TRANSFUSION SEQUELAE MAY BE AVOIDED

(*a*) *Blood Typing.*—Our experience emphasizes the necessity for cross grouping of recipient's and donor's blood if one is to avoid the acute or the delayed post-transfusion reactions. We are fully in accord with the observation of Guthrie and Huck. While the four-group classifications of Moss and Brem may prove clinically reliable in the majority of transfusions, yet one can never feel confident that bloods typed by such a method can be mixed safely. Particularly when patients have been transfused frequently, and numerous donors have been employed, is it necessary to regroup bloods at every transfusion, and in all instances to cross-group the blood. The four post-transfusion reactions (Fig. 3) occurred in a series of 106 transfusions recently performed by one of us (R. A. K.). All of these reactions occurred before we adopted cross-grouping of donor's and recipient's blood as a routine, and supplementary to typing by Vincent's microscopic method. A later series of fifty-four transfusions in which bloods were cross-grouped was followed by no reaction.[9]

Certainly, selecting donors without cross grouping makes blood transfusions a hazardous clinical procedure. Unquestionably, many of the untoward sequelae of transfusions reported in the literature have been due to clinicians having placed too much reliance on the four-group method of typing. It is these unfortunate transfusion sequelae that have caused blood transfusion to fall into disrepute in certain quarters.

(*b*) *Whole Blood Versus Citrated or Otherwise Altered Blood.*—There seems to be no reason why, if proper apparatus and sufficient technical skill are at hand, anything but whole blood should be employed in transfusion. The plea of expediency and speed should be no excuse for the uses of blood altered by the addition of various salt solutions. If transfusion is really needed to insure clinical benefit to a patient, blood in its most efficient biologic form should be employed and the operation of transfusion should be carried on with the greatest care. Here is not the place to discuss the various forms of mechanical aids to transfusion or to quote statistics showing the advantages of whole blood over citrated or otherwise altered blood. We have already stated above why statistical comparisons in blood transfusions are of little value. Certainly, our experience indicates that the use of whole blood, properly typed, insures fewer post-transfusion reactions and greater clinical benefit than by the employment of citrated, salted or blood otherwise changed. Less than 4 per cent. of reactions of any kind have followed the use of whole blood.

(*c*) *Anaphylaxis and Protein Shock.*—These terms have been employed loosely with regard to post-transfusion reaction. We have already emphasized some of the possibilities for confusion. Many of the so-called "anaphylactic reactions" accompanying blood transfusions are really protein shock, i. e., due to nonspecific protein, and in such event no previous sensitization is necessary. Anaphylaxis was not observed in any of the four post-transfusion reactions occurring in our last 106 transfusions. Several of the patients in this series have received from ten to sixteen transfusions. Passive anaphylaxis [10] may be avoided by questioning and examining the prospective donor for the transfusion. Ramirez [11] records an instance in which positive sensitization to horse hair protein occurred following donation of an asthmatic's blood. In our four post-transfusion reaction there was a diminution in leukocyte count, a clinical phenomenon highly suggestive of Widal crisis. Such phenomena emphasize the neces-

9. A very simple method of cross grouping that we have found practical is as follows: About 1 c.c. of blood is withdrawn by means of a fine needle from a vein of the donor and recipient, and each added to an equal amount of physiologic sodium chlorid solution to which a few crystals of sodium citrate have been added. These are centrifugalized. The supernatant fluid is then withdrawn by a pipet into other containers and each labeled. Two or three drops of this supernatant fluid is placed on one glass slide. To this is added, by means of a platinum loop, a loopful of the cells of the patient's blood. These are agitated by the platinum loop to mix the two thoroughly. Then to a few drops of the patient's serum is added, in a similar way, cells of the donor. If agglutination takes place at all, it usually is within a minute (Fig. 3). Warming the slide to body temperature will hasten any possible agglutination. The cells are then examined microscopically. We have very frequently noted agglutination, in instances in which the blood of both the patient and the prospective donor were separately typed as Type 4.

10. Boughton, T. H.: J. Lab. & Clin. Med. 5: 597 (June) 1920.

11. Ramirez, M. A.: Horse Asthma Following Blood Transfusion, J. A. M. A. 73: 984 (Sept. 27) 1919.

sity for considering certain reactions as being possible when the diminished proteopexic liver function permits leakage of circulating proteins through the liver, with subsequent parenteral cleavages of such proteins.

(*d*) *Pigmy Transfusion.*—If an ailment or an accident calls for blood transfusion as an emergency measure and test serums are not available or are dubiously reliable, serious immediate or delayed post-transfusion responses may be avoided by intravenous or intracutaneous injection of small blood volumes taken from prospective donors.

Following the intravenous introduction of from 15 to 30 c.c. of incompatible whole blood, the subject exhibits mild sensations of peripheral skin discomfort, is restless, may be somewhat dyspneic, has slight chill, and may perspire locally about the forehead or feet, or in the axillae or palms of the hands. Temperature observations disclose elevations of from 1 to 3 degrees F., the rise being rapid, the fall by lysis within six hours. Nausea and, rarely, vomiting may occur. The inconvenience is not great, however, and the response is so acute that such pigmy transfusion is of practical value and its employment is justified. In instances of severe blood dyscrasia, when numerous transfusions have been made previously or in advanced cachexia, the responses to pigmy transfusion of whole, incompatible blood, whether it be introduced into areolar tissue or into the veins, the local or systemic "reactions" are apt to be not so pronounced as when the test is given to subjects who are affected with secondary anemia. This applies, even though in each group of patients, the blood counts are closely approximate.

(*e*) *Indications.*—Blood transfusions should be made with extreme caution and only in dire emergencies when subjects exhibit pulmonary or cerebral edema; when the renal output is low, and the urines contain albumin, casts or blood; when deficient cardiac strength has resulted in persistent peripheral edema, or where myocardial weakness admits but little added stress. In such instances, the transfusion of compatible blood may precipitate an acute, fatal crisis; the use of incompatible blood is commonly followed by cerebral, cardiac or renal failure, or rapidly increasing pulmonary edema literally drowns the patient. Post-transfusion and visceral edema may lead to exhausting diarrhea or vomiting; not rarely this has been considered central in origin. It is difficult or impossible to control. Certainly, previous to blood transfusion—whether whole or modified blood is used—the efficiency of the heart and kidneys should be determined and careful physical examination should exclude cerebral, pulmonary or splanchnic zone edema. If the examinations disclose any of these dysfunctions, then transfusion should be postponed until, by rest, diet or medicinal agents, the situation has changed. When untoward post-transfusion phenomena appear (tight skin sensations, restlessness, air hunger, pink flush to body surface, cough, etc.), knowledge that the physiologic upset attacks first the circulation at its capillary bed, demands the prompt exhibition of epinephrin. Fifteen to thirty drops of the 1:1,000 solution, diluted with 30 c.c. of physiologic sodium chlorid solution, should be given slowly into a large vein. The embarrassed condition of the capillary bed contraindicates small doses of epinephrin administered subcutaneously or intramuscularly; such are not effective anywhere but locally, at the injection site. The epinephrin solutions may be given as frequently as at half hour intervals, depending on their action. It is our opinion that, as knowledge of the vascular crisis in the acute post-transfusion reaction has been previously indefinite, the dosage of epinephrin has been too small to be effective. Digitalis and other heart stimulants are usually not useful (although they are employed quite generally) unless epinephrin is also given. When it appears that the acute distress has passed, then blood clotting is aided by intravenous injection of from 10 to 20 c.c. of 1 per cent. calcium chlorid solution as frequently as every four hours for at least six injections. Within twelve hours following the transfusion reaction, stimulation of renal function should be attempted by the intravenous exhibition of 10 grains (0.65 gm.) of caffein sodium benzoate at six hour intervals, or, if there is no gastric upset and nourishment is being taken without nausea or vomiting, 15 grains (1 gm.) of theobromin sodiosalicylate every eight hours. Fluids should be given by mouth in moderation; too often they are pushed in the endeavor to wash out any accumulation of toxic products of hemolysis. This is an error: the reaction has already rendered peripheral tissues very edematous; the blood is more than ordinarily fluid and its clotting time prolonged. The object of diuretics should be to stimulate an edematous kidney first, to free itself of its own fluid excess, and then to excrete the increased tissue edema so generally present in this acute vascular crisis. Pushing fluids only throws an added burden on kidneys already seriously taxed.

SUMMARY

1. If whole blood is employed in blood transfusion and if donor blood is carefully selected, post-transfusion reactions are relatively rare: less than 4 per cent. in our series.

2. Post-transfusion effects of a harmful type may be minimized if donors are selected not only with respect to their place in the arbitrary four group classification of Moss, but when donor and recipient bloods are cross-grouped for estimation of their agglutinin-agglutinogen content.

3. There are three types of post-transfusion: the immediate or hemolytic, the delayed, apparently not hemolytic but proteolytic, and the constitutional or nonhemolytic.

4. The subjective and objective phenomena of hemolysis can be explained by the effects of lysed blood on the peripheral capillary bed. The mechanism of this capillary response is similar in kind, but greater in intensity, to peripheral vascular phenomena observed in Raynaud's disease, purpura, etc.

5. The nonfulminant and delayed post-transfusion reactions are caused by anaphylactoid protein phenomena, but not necessarily of specific nature.

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ABSTRACT OF DISCUSSION

DR. F. W. HARTMAN, Detroit: We would suggest an additional group in the types of reactions mentioned by Dr. Smithies; that is, atypical anaphylactic attack with swelling of the face, cyanosis and difficulty in breathing during the transfusion or within a five minute period following transfusion. We have seen such a reaction four times in a series of approximately 300 cases, and it is almost immediately relieved by the administration of epinephrin. The hemolytic reaction should no longer, we believe, be considered when speaking of blood transfusion reaction, since the usual typing of the blood and cross agglutination of the patient's and donor's blood will eliminate the possibility of this occurring. All other types of reaction,

occurring within a one hour to three hour period after transfusion, should be grouped together, since they are probably manifestations of the same factor or factors, whatever this may be. It seems that these factors are definitely associated with the transfused blood coming in contact with foreign material. In this connection we recall the work of Novy, who showed that blood withdrawn from a guinea-pig and allowed to come in contact with inert foreign substances and again injected often produced a fatal shock. In using citrated blood there are two other possible factors; namely, the citrate itself and the water with which it is made up. Huntoon has shown how important the water factor is in his work on pneumococcus antibody solution. A factor that has seemed of some importance is the marked rouleau formation which we sometimes see in cross agglutination. We have felt for several years that this was possibly a type of incompatibility, and, by eliminating donors which show this rouleau formation with the patient's blood, we have been able to cut our reactions with the citrate method to about 10 per cent. In a personal communication, Dr. Longmire of Texas tells me that in a series of 150 cases done with the citrate method, taking this precaution about rouleau formation, he has not had a single case showing chills. The shock occasionally associated with the rapid administration of a direct transfusion should not be included as a transfusion reaction but should be kept in mind. We recently saw a patient with mitral and tricuspid stenosis who died with acute pulmonary edema within the twenty-four hour period following such a rapid direct transfusion. With citrate transfusions, such shocks may be avoided by using a small needle and spreading the administration of the first 100 c.c. over a longer period of time.

DR. HENRY F. STOLL, Hartford, Conn.: A factor that has not been mentioned is the use of apparatus that is not perfectly clean. Repeatedly, after apparatus has been given me as ready for use, on further rinsing with ether, a considerable amount of foreign material (dried blood) has been obtained. Unclean apparatus unquestionably contributes to reactions that, while not of the serious type, are, nevertheless, very unpleasant for the patient. In regard to avoiding the immediate reactions, due to improperly matched bloods (and incidentally the man doing the transfusion should either perform his own blood matching or confirm the grouping), if the first 20 c.c. of blood is injected very slowly, as can be done if a little 2 per cent. citrate or physiologic sodium chlorid solution (5 c.c.) is added to the first syringeful, the early signs of incompatibility are immediately recognized and the injection is stopped before harm is done. The rapid introduction of a large amount of blood is always accompanied with some hazards. Chemically pure citrate made with freshly distilled water can be excluded as a cause of reactions. I have injected a buffered solution of sodium citrate that has a p_H value of 7.6 or 7.8 for the relief of pain of thromboangitis obliterations upward of 200 times, and I have never yet had a single reaction although more citrate is given than in an ordinary transfusion. Dr. Stokes at the Mayo Clinic showed that certain brands of rubber tubing contained toxic properties when new unless they were soaked in a solution of sodium hydroxid before use. The direct (syringe-cannula) method gives fewer reactions than the citrate method, but it isn't the citrate as much as it is the manipulation and chilling of the blood and the use of improperly cleaned apparatus.

DR. ANDREW A. EGGSTON, New York: I believe that the one who does the transfusion should be responsible for the typing of the bloods. The typing serums, unless frequently controlled and properly preserved, may be a source of error. I always preserve the type serum in sterilized and sealed vaccine ampules. In this way they will keep almost indefinitely. A new ampule is opened each time a typing is done. Cross typing is always done before a transfusion. I do not think that rouleau formation of the red cells, spoken of by one of the previous speakers, has very much relation to the reaction. Rouleau formation to a certain extent depends on the solution in which the red cells are suspended for the typing. If blood is collected in a citrate solution, rouleau formation is more frequent than in a physiologic sodium chlorid solution. I have used donors who have shown rather marked rouleau formation on cross typing, with no distinct harmful reaction. Outside the very serious reactions that occur in transfusions, the temperature reaction may be overlooked as they have therapeutic value, particularly in infectious cases. Nonspecific proteins are used in many infections to produce reactions in the treatment, with good results. Therefore they may be minimized following transfusions, particularly when only a mild elevation of temperature occurs for a few days. The very severe reaction should be avoided, if possible. No doubt certain physical conditions of the recipient are likely to account for some serious reactions. I refer to pulmonary edema in cases of fatty degeneration of the heart that occurs in pernicious anemia. Likewise, in chronic nephritis, transfusion should be done with great caution. In considering the method of transfusion, experience is a determining factor. Formerly we used the citrate method, but now we use a direct method. In all, we have done between 700 and 800 transfusions. The direct method is certainly a much nicer technic and distinctly more surgical. The blood must be delivered very quickly, and a great deal more time and skill are required to master the technic. On the other hand, the citrate method should not be condemned altogether because there are many localities where physicians do not perform enough transfusions to master the technic of the direct transfusion, and the citrate method is certainly a good substitute.

DR. MARTIN L. JANES, New York: Two points must be considered in every transfusion so far as its successful outcome is concerned; that is, first, the proper grouping by the person who is to do the transfusion. That person's mind and judgment should be trained to form conclusions regarding the proper matching that is done on the slide or under the microscope. The second major point in the technic of the performance of a blood transfusion. There is no question of the fact that physiologic sodium chlorid or citrate solutions do contribute to the possibility of post-transfusion reactions. The ideal method of transfusion, without any doubt, is one that transfers the blood as rapidly as possible without the introduction of any foreign material whatever. It was with this idea in mind that, about five years ago, I presented an apparatus in which two syringes were employed, one filling while the other one discharged, and vice versa, so that there was a continuous flow of blood provided between the donor and recipient, without the necessity for the introduction of any foreign material. In a series of 260 consecutive cases of blood transfusion that I have performed since in various hospitals in New York, I have had not a single reaction, and the only reason for these results is the fact that I have personally supervised the matching of the bloods and also because of the smooth technic in the transference of the blood. An ideal method of transfusion is one that transfers the blood rapidly with the least exposure of the blood to any extraneous material and the least amount of time in which that blood remains outside the blood vessels.

Strabismus Among School Children.—In the course of some 12,000 examinations of school children of all ages in Nassau County, N. Y., New Castle County, Del., Porter County, Ind., Frederick County, Md., and Spartanburg and nearby mill villages in South Carolina, made by officers of the U. S. Public Health Service, 0.9 per cent. were observed as having strabismus. About four fifths were internal and one fifth external in type. The strabismus rate for girls is slightly higher than for boys when all ages are considered together. The percentage of children who have external strabismus is practically constant throughout the school ages, showing possibly a slight tendency to increase. On the other hand, internal strabismus is much more prevalent among children under 12 years than it is among older children. At Gary, Ind., the strabismus rate was 1.3 per cent. among 994 children under 2 years of age, and 2.4 per cent. among 3,125 children from 2 to 7 years of age. The association of strabismus with diminished visual acuity is quite definite. The rates increase regularly from 0.13 per cent. for children with normal visual acuity to 8.11 per cent. for those with vision of 20/70 or worse in one or both eyes. The difference between these rates, 7.98 ± 2.14, is significant, being more than three and one-half times its probable error. Of more importance, perhaps, is the fact that the increase in the strabismus rate as visual acuity decreases is regular for both boys and girls. The percentage of children who have strabismus increases as visual acuity decreases, even among the children who have approximately the same acuity in the two eyes.—Collins, S. D.: *Pub. Health Rep.* **40**:1516 (July 17) 1925.

UMBILICAL HEMORRHAGE ACCOMPANIED BY DEEP JAUNDICE

REPORT OF A CASE IN A BABY, AGED TWENTY DAYS

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MANILA, P. I.

This case is reported because the cause of the hemorrhage and jaundice could not be ascertained, and because the results of blood transfusion and roentgen irradiation were of interest.

Clinical Course.—Baby G., a boy, born spontaneously at the private maternity department, Philippine General Hospital, Dec. 28, 1924, weighed approximately 7½ pounds (3.4 kg.) and presented nothing unusual except a large, thick cord which the nurse was obliged to tie with three tapes. The infant nursed well and the mother had plenty of milk. On the second day, he became yellowish. On the fifth day, white spots appeared on the tongue and the buccal mucous membrane, and blisters, filled with yellow serum, appeared on the buttocks and upper parts of the thighs. The urine also became yellow. There was no fever. The blisters healed after treatment for one week with zinc oxid ointment and powder. The cord fell off on the twelfth day, leaving the umbilicus dry and well healed. The white coating of the tongue, common among the babies born in this ward, was removed daily by the nurse with cotton or gauze wet in weak potassium chlorate solution. After three days the mouth, tongue and lips became livid. Occasionally after nursing the baby ejected about one teaspoonful of red-tinged milk. The raw appearance of the mouth was attributed to too vigorous cleansing.

The child seemed to be normal except for the jaundice, yellow urine and red mouth. On the nineteenth day, however, the baby lost his voice. Efforts to make him cry caused only a grimace, without sound. The previous night the mother could not make him nurse; at midnight he had uttered a sharp cry, after which he slept and could not be awakened. Believing the child to be suffering from infantile beriberi (the mother was weak and anemic), I gave him tiquitiqui extract[1] hypodermically and by mouth.

The next day, the twentieth day of life, the cord dressing was found to be slightly stained with blood—the first stain seen since the cord fell off—and a dark blue spot formed on the left arm. Epinephrin solution, applied to the umbilicus, stopped the bleeding. The following day, the cord dressing was again stained with blood. The baby was given, intramuscularly, 5 c.c. of horse serum with 2 drops of epinephrin. However, big dark blue patches formed on the back of the chest. The cord dressing was changed daily and the blood stain increased more and more until the night of January 11, the twenty-fourth day since birth, when the bleeding from the umbilicus was profuse and could not be controlled by pressure, epinephrin, ferric chlorid or silver nitrate.

For want of surgical facilities in the patient's home, I controlled the alarming hemorrhage by clamping the umbilicus together with the surrounding skin. About one hour later, one tube of a proprietary hemostatic horse serum preparation was injected intramuscularly.

The next morning, the spleen and the long bones of the lower extremities were exposed to roentgen irradiation (from 75,000 to 80,000 volts) for one minute at a distance of 6 feet by Dr. Fernandez of the roentgen-ray department, Philippine General Hospital. Ten cubic centimeters of whole compatible human blood was injected intramuscularly, and, in the afternoon, Dr. J. Estrada injected in the median basilic vein, by the open method, about 75 c.c. of citrated blood. The effect of the transfusion on the color and appearance of the baby was marked. The roentgen-ray treatment of the long bones of the upper extremities was resumed five days after the first exposure. After the blood transfusion the baby was given, intramuscularly, every day for one week, from 8 to 15 c.c. of whole human blood. During this time, new dark blue blotches developed on the legs, the back of the hands, and the dorsum of the feet. The old patches became resorbed. The jaundice persisted, and bile pigments were found in the urine. The stools were regular and of normal yellow color.

Twelve hours after its application, the clamp on the umbilicus, which was long and cumbersome, was removed. Blood gushed out in the short interval until a shorter clamp could be applied. Two days after the application of the clamp, the surrounding skin became red and swollen. Dressings wet with hot aluminum acetate solution were applied. The inflammation was much improved the next day, but the clamp became rusty and was taken off, and a ligature of tape was substituted. The skin at the site of the clamp broke off and showed slight oozing of blood partially controllable by the application of ferric chlorid. The stump was black and gangrenous.

On the seventh day after the blood transfusion, the bleeding around the stump was so free that a purse-string linen suture was tied around the umbilicus. This controlled the bleeding. The stump had already sloughed up. The next day, the eighth day since the first blood transfusion, 120 c.c. of citrated blood was injected in the median basilic vein by Dr. Estrada. Two days after the application of the purse-string suture, the skin within the ligature came off, leaving a raw surface which was not bleeding. However, on the fourth day after the second transfusion, the bleeding from the raw surface was somewhat profuse so that 150 c.c. of citrated blood was injected in the saphenous vein, and bleeding from the umbilicus ceased.

On the fourth day after the third transfusion, the umbilicus began to bleed again. The stools and the secretion from the mouth were tinged with blood. The jaundice became deeper. Presh cephalin, especially prepared by the Bureau of Science, was applied over the umbilicus, and partially controlled the oozing. The next day, serum from an eclamptic patient was applied locally and proved a more efficient styptic than cephalin. A daily intramuscular injection of 5 c.c. of Witte's peptone was begun on the same day. However, the tendency of the umbilicus to bleed increased daily, and neither the cephalin nor the serum from an eclamptic patient controlled the continuous oozing. On the eighth day after the last transfusion, 200 c.c. of citrated blood was injected in the other saphenous vein. The umbilicus had healed rapidly so that the raw surface, which had been bigger than a silver dollar, was reduced to the size of a quarter. Again, Dr. Castillo irradiated the spleen for five minutes and the long bones for four minutes, using 90,000 volts at a distance of 8 inches.

Much hope was entertained for the child's cure, but again on the fourth day after the last transfusion, the umbilicus, which was almost completely healed, resumed bleeding. At the same time, the right thigh at the site of the intramuscular injection of blood, made seventeen days previously, became swollen and red, denoting the development of suppuration. On the seventh day after the last transfusion, the baby became restless and uttered shrill, piercing cries, which were thought to be due to the condition of the thigh. Dr. Estrada removed about 20 c.c. of blood and later 10 c.c. of pus by aspiration. Within a few minutes, the right knee became swollen and black and the transfusion wounds of both thighs and one of the arms showed bleeding. The umbilicus had more active oozing, which could not be stopped by either cephalin or blood serum; but the site that bled the most and which was beyond control was the site of puncture of the aspirating needle. A few hours after the aspiration, the baby again uttered shrill, piercing cries. An internist who heard the cry suspected it to be of cephalic origin caused, probably, by hemorrhage in the brain or meninges. In less than twenty-two hours after the puncture of the abscess, the child died of exsanguination at the age of 1 month and 22 days.

Family History.—The mother and her family give no history of hemophilia. The father, a sister and a brother of the baby are bleeders. The father has occasional nosebleeds. The eldest brother, after the extraction of a tooth, had a hemorrhage that endangered life. One sister developed black and blue spots on the skin after slight trauma. The father had a negative Wassermann reaction.

1. A local name for extract of rice polishings.

COMMENT

The jaundice appeared soon after birth and gradually grew in intensity until death. The urine and the serum under the blebs were deep yellow, an indication of hemolysis. No improvement was noticed as a result of the roentgen-ray treatment. The coagulation time and platelet count were not determined, but blood that had oozed out and had been undisturbed for more than seven hours was found to be liquid. After each transfusion, bleeding of the umbilicus practically stopped; but at the end of from four to five days, the bleeding recurred. Finally, diffuse bleeding from the mucous membranes of the mouth and intestines occurred.

DIAGNOSIS

The intense jaundice of the skin suggested the possibility of an obstruction in the bile ducts, but the stools were of normal color. In hemorrhage of the new-born, the bleeding occurs early, usually in the first week, and there is no history of bleeding in the family. Since the bleeding occurred in the first month, the coagulation time was much delayed, and since the disease appeared to be inherited, hemophilia was strongly suggested to us. However, hemophilia is a hereditary blood dyscrasia manifested by members of the male sex but transmitted only by the female members. The bleeders in the family of this infant were on the father's, not the mother's, side of the family. In purpura hemorrhagica the coagulation time is normal. In icterus gravis as described by Pfannenstiel,[2] there is "early jaundice increasing in intensity, absence of fever, presence of bile pigment in the urine, normal appetite, disposition to screaming and absence of acholia in the stools" and a tendency to umbilical hemorrhage. All of these symptoms fit the manifestations of our case.

ETIOLOGY

My impression is that the hemorrhages and the blebs were independent. In the maternity ward where this baby was born, a large percentage of the babies became affected with this pemphigus-like eruption, but no other infant had any complication nor did any of the infants, including our patient, have fever. The eruption in every case yielded easily to treatment with zinc oxid. The bleeding commenced eight days after the blebs had become entirely healed and dried up.

The father's Wassermann reaction was negative, and the obstetric history of the mother presents no indication of syphilis.

TREATMENT

The benefit of the first transfusion was marked, but the transfusion was effective only from four to five days. It is known that the life of the platelets is from three to five days. It is presumed that, at each transfusion, enough sound platelets were introduced to establish sufficient prothrombin to make the blood normal; but as soon as the foreign platelets died the old tendency to bleed returned. If this observation is correct, the proper treatment would be to try to enable the patient to manufacture prothrombin of normal quality and quantity, or if the cause be infective agents that destroy the normal prothrombin, to eradicate this factor.

The roentgen rays are believed to stimulate the blood centers, such as the spleen and bone marrow, and to increase the coagulation of the blood, but, to our disappointment, in this case irradiation did not bring about the desired result.

2. Pfannenstiel, cited by Von Reuss, A. R.: The Diseases of the New-Born, New York, William Wood & Co., 1921.

RECURRENT DISLOCATION OF THE SHOULDER JOINT *

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Recurrent dislocation of the shoulder joint has excited considerable discussion in this country in recent years, and in consequence there is much less tendency to discuss different causes and the different operations based on these causes. It may fairly be said that the nonoperative treatment, by braces, offers practically no relief, and that the operative treatment is confined almost entirely to methods of contracting the axillary portion of the capsule. The employment of a portion of the deltoid muscle as a flap passed under the humeral head as a sling support to prevent its escape from the socket has earned the right to be considered among the available methods of treatment. As much can hardly be said for dividing the muscles in the axillary folds to overcome their supposed effect in pulling the humeral head from its socket or glenoid cavity.

The advocate of any particular view as to the pathologic condition should offer not extensive argument but the results of treatment based on that point of view. Because of its reported results, operation to contract the axillary part of the capsule has become almost the only one performed at the present time. Without going into an extensive discussion of the subject, I would merely express the opinion that the passing of a flap of the deltoid muscle under the head and neck of the humerus, close to the axillary portion of the capsule of the shoulder joint, prevents further recurrences of the dislocation, or reduces their frequency, not by the support afforded the humeral head by the small portion of the deltoid, but by the cicatricial contraction of the axillary portion of the capsule. This results from the free exposure of it rendered necessary for passing the deltoid flap around it, and from the subsequent healing of the bared capsule in its wrinkled and folded condition which results from the Velpeau or adducted position in which it is bandaged.

I have developed at length the pathogenesis which I accept but can now refer to it in only a summary manner. I have referred to the all important abnormally relaxed axillary portion of the capsule as a hernial pouch which must be removed for a radical cure, and to this pathology I still adhere. But a few lines may be permitted for an attempt to account briefly for the hernial pouch. A dislocation is merely a fracture of the skeleton at a joint with displacement of the fragments, the fracture consisting in a tearing of the axillary portion of the capsule (Fig. 1 *B*). A similar but milder capsule tear without dislocation occurs in a sprain, or as great a tear when a dislocation and spontaneous reduction occurs. The cause is the extreme movement of abduction from a force beyond what the ligament will withstand. These joint ligaments are as strong as or stronger than the bones between the joints, as is shown by the fact that fractures of the surgical neck of the humerus are much more frequent than dislocations of the shoulder, at least if we disregard the unknown number of dislocations that become spontaneously reduced. The same thing is true at the elbow.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

Dislocations there, while common, are not nearly as common as supracondylar fractures of the humerus.

Hyperabduction at the shoulder joint in the cadaver with sufficient force always results in a typical anterior or subcoracoid dislocation, never any other kind. Practically all dislocations of the shoulder joint in life are anterior or subcoracoid. Therefore, hyperabduction is the cause of this dislocation. If one objects to such simple reasoning, let us ask, Did any one ever offer better evidence for any other mechanism, or as good? The most generally accepted fracture mechanism is that of Colles' fracture. Did any one ever prove that Colles' fracture is due to the fall on the hand? If so, how? Does any one deny this mechanism today? The same questions may be applied to Pott's fracture or any other fracture or dislocation, so far as establishing its mechanism is concerned. I now wish merely to justify as well as I can, briefly, my assumption that the typical and common anterior dislocation is due to hyperabduction.

NATURE OF ANTERIOR DISLOCATIONS

Normal abduction is limited primarily by the axillary portion of the joint capsule. Hyperabduction tears it, and if the force is great enough, turns the head out of the socket into the axilla, the torn capsule margins being pushed apart to permit so much displacement (Fig. 1 *B*). After reduction, the margins of the tear become approximated, and with the arm at the side of the body the torn region of the capsule becomes shortened by folding on itself, so that if the arm remains in this position until the torn capsule margins become reunited by cicatricial tissue, the whole axillary portion of capsule in its folded condition becomes involved in the cicatricial tissue and consequently shortened, resulting in limited abduction and external rotation, and in the early stages pain on abduction (stiff and painful shoulder). But if the arm is carried forcibly into abduction before the cicatricial healing is strong enough to resist stretching of the scar, with or without slight tearing of this new cicatricial tissue, a new dislocation develops from a degree of force much less than necessary to produce the first dislocation. Repeated dislocations prevent the contraction of the capsule to or within the normal length, and this abnormally lengthened capsule permits easy recurrence without fresh tearing, so that on reduction, no reparative inflammation follows and consequently little or no pain or disturbance of motion.

If the capsule has been contracted by operation, a new dislocation can follow from sufficient force, but only with the production of a new tear of the axillary capsule with consequent reparative inflammation and new cicatricial tissue about the tear. If, after the reduction of the new dislocation, the arm is kept at the side for four or five weeks again, the cicatricial tissue produced by the operation will be added to or reinforced, and a new dislocation rendered almost impossible without a second operation. This is the point which I would most emphasize in this paper; i. e., that if a recurrence should follow operation, a second operation will not be necessary in a nonepileptic patient, because the new tear and the consequent new cicatricial tissue with the arm fixed in the Velpeau position for four or five weeks will make the axillary portion of the capsule much stronger than the repair from the operative scar tissue did. One need not be concerned about stiffness of the joint afterward. A slowly returning motion makes a stronger joint than a rapidly returning motion.

TREATMENT

No operation yet reported, except those affecting the bones, has shown itself proof against failures, but capsulorrhaphy has come nearer to such a result than any other. According to my interpretation, my results to date show that it offers close to 100 per cent. cure of the dislocations, and close to 100 per cent. functional results in nonepileptic patients. In only one case was a second operation done, and in only three were the dislocations not stopped. These were the only patients who could not be controlled and who consequently did not follow instructions after operation. In a nonepileptic patient, a dislocation following operation is an advantage, not a disadvantage in that particular case. An inguinal hernia recurring after operation cannot be cured without another operation. A shoulder dislocation recurring after a capsulorrhaphy can be cured probably more certainly, and surely more safely, without a second operation than with one. If the capsule repaired by the operation is not as strong as normal or as strong at least as is necessary for the needs of that particular patient, then the quicker another dislocation takes place, the better for that patient.

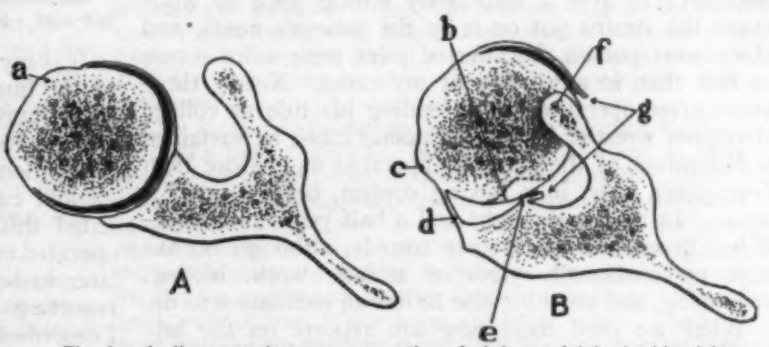

Fig. 1.—*A*, diagrammatic transverse section of skeleton of left shoulder joint at about its middle. *B*, same parts in the position of an anterior or subcoracoid dislocation, showing the anterior portion of the capsule torn at the glenoid margin and the torn margins thrust aside by the dislocated humeral head. The gap between these torn margins becomes filled in by new or cicatricial capsule, as the gap between the divided ends of a contracted Achilles tendon become bridged together by new or cicatricial tendon. The capsule thus lengthened permits recurrent dislocations without fresh tearing of capsule and reparative inflammation afterward. The humeral head dislocating in abduction great pressure on the posterior surface of the head results when the arm falls to the side of the body. This accounts for the groove in the head (shown by dotted line) which I have found in every case in which I have operated. It sometimes represents the loss of a fourth or a third of the head. If when the arm falls to the side this pressure is not great enough to lock the head in dislocation, then a spontaneous reduction occurs. In a recurring subluxation (snapping shoulder) only temporary locking in abduction takes place, and the head snaps back into the joint on certain movements of the arm. In a high excision of the humeral head (position of saw cut indicated by line *b*) the head is sawed off just above the anatomic neck and a little outside the pressure groove, so that the only portion of the head that leaves the socket in a dislocation is removed and nothing is left to be dislocated: *b*, position of saw cut; *c*, greater tuberosity; *d*, taut posterior capsule; *e*, anterior glenoid margin; *f*, coracoid process; *g*, torn fragments of capsule.

After the necessary period of caution following operation, say three or four months, when cicatrization may be considered completed, I advise the most violent use of the arm that the patient is willing to make. Before the operation, there was a hernial pouch of capsule large enough to receive the dislocated humeral head so that no trauma or tearing of capsule occurred, and consequently, after reduction, no inflammatory reaction or formation of new cicatricial tissue. After operation, in a new dislocation, the head must tear its way out at its weakest place, so that after the reduction new cicatricial tissue must form just where it can best reinforce the capsule. If relaxation and shortening of

this axillary portion of capsule is maintained five or six weeks by bandaging the arm in the Velpeau position, the most important part of the capsule will be shortened and thickened as effectively as, if not more effectively than, it could be by a second operation. In other words, the first dislocation following operation produced a pathologic condition similar to that resulting from the original dislocation. If that had been treated properly, the patient would probably never have developed a recurrent dislocation. Instead, he would have had a stiff and painful shoulder, which is the chief purpose of a capsulorrhaphy in these cases. The stiffer the shoulder when the bandages are removed, the better the prognosis. In any case, at this stage the patient can abduct the arm to a level with the shoulder, which is sufficient for most functioning of the limb. There is no occasion to worry about a permanent ankylosis. There is more occasion to be concerned about a rapid return of full motion. In any case, another dislocation properly treated will result in a stronger joint.

RESULTS

In only one of my cases was a second dislocation necessary to give a sufficiently strong joint to withstand the strains put on it by the patient's needs, and the strains put on the affected joint were more severe in this than in any other of my cases. Nearly three years after operation, in defending his title as college champion wrestler in the 158 pound class, he sustained a dislocation of the shoulder operated on. More than four years later, in a boxing contest, he dislocated it again. In the nearly eight and a half years since then, it has given him no further trouble, although he has kept up continually vigorous athletic work, boxing, swimming, and anything else he has an inclination to do.

What we need most now are reports on the late results in the patients operated on, and such reports are growing. Recently Valtancoli [1] reported the results in thirteen patients operated on, capsulorrhaphy being the only operation performed. The immediate results were good in all. The late results were learned in nine cases. Of these, in six the results were faultless, in one good, and in one (an epileptic patient) wholly negative after the first operation, but excellent after the second operation. In the remaining cases the result was good for seven years, but during military service the trouble recurred and has persisted. He summarized his results as follows: The operation was successful in 86 per cent. (with complete restoration of function), cure with reduced function in 7 per cent., and failure in 7 per cent.

I have operated on fifty-seven shoulders in fifty-three patients, eighteen shoulders in epileptic and thirty-nine in nonepileptic patients. Of the latter, three were of the "snapping shoulder" variety or recurrent subluxations. Since my last report,[2] no additional epileptic patients were operated on. Of these eighteen, a capsulorrhaphy was done first in seventeen. After three capsulorrhaphies with failure, a high excision of the humeral head was performed six years ago, and since then there have been no more dislocations in that shoulder. Shortly afterward, a recurrent dislocation developed in the other shoulder of this patient, the dislocation being repeated with every convulsion. The patient being very muscular, the convulsions were very violent and they were very frequent. Since he was of low mentality, permanently confined to an asylum and difficult to control, it was decided that a high excision was indicated without resorting to a preliminary capsulorrhaphy.

The results in the eighteen shoulders in epileptic patients are summarized as follows:

No recurrence after one capsulorrhaphy: Ten cases, or 55.5 per cent., the first patient being operated on fifteen and one half years ago, the last six years ago.

No recurrence after two capsulorrhaphies: Two cases, or 11 per cent; last operation in first case five years ago, and in second case, three years ago.

Capsulorrhaphy thus was 66.5 per cent. successful in epileptic cases and a failure in six shoulders, or 33.5 per cent.; but bone operations stopped the dislocations completely in five of these and were not tried in the other. These six may be tabulated as follows:

No recurrence after high excision of the humerus: Four shoulders, or 22 per cent. of the eighteen epileptics; this operation done in the first shoulder six years ago and in the fourth, three years ago.

No recurrence after reshaping glenoid cavity: One case, or 5.5 per cent.; operation, fifteen and one half years ago.

Recurrences after two capsulorrhaphies: One case, or 5.5 per cent.; last operation, thirteen and one half years ago.

It is my belief that a dislocation after a high excision of the humerus is impossible because the only portion of the humerus that can leave the socket in a dislocation is removed by this operation (Fig. 1 *B*), and that a dislocation will not occur after a reshaping of the glenoid cup. Hildebrand,[3] who seems to have originated this operation (reshaping the glenoid cavity), operated on two patients with normal motion developing later in both cases, and no recurrences at the time of reporting them. I know of no other reported cases. I described and illustrated each step of the high excision of the humerus [4] and the functional result [2] in a case in which this operation was done in both shoulders for recurrent dislocation, as well as the roentgen-ray findings long after the second operation. The functional result is between 70 and 80 per cent. of the normal in both shoulders, although the patient is mentally defective from his epilepsy, and little disposed to take the exercises necessary for the development of full function. In an epileptic patient who has the mentality to work for and appreciate full function, in whom the capsule operation has positively failed, I would give the preference to the Hildebrand operation, although it is not as easily done, because it appears to offer the best chance of normal function from suitable exercises.

Of the thirty-nine nonepileptic cases, a single capsulorrhaphy was done in all, with the exception of one early case in which two capsulorrhaphies were done. With the proper care, this operation is sufficient, in my opinion, to stop the dislocations entirely and to give a normal functional result. Three have not been heard from recently, and three others were of the "snapping shoulder" or recurrent subluxation variety. The remaining thirty-three cases may be thus summarized:

No dislocation since operation in twenty-two cases, or 66⅔ per cent.; first patient operated on seventeen and one-half years ago, and last six months ago.

One dislocation since operation in seven cases; in the first case, this dislocation occurred in the first year after operation,

1. Valtancoli, G.: Chir. d. org. di movimento **9**: 131-140 (Dec.) 1924.
2. Thomas, T. T.: Surg., Gynec. & Obst. **32**: 291 (April) 1921.
3. Hildebrand: Arch. f. klin. Chir. **66**: 360, 1902.
4. Thomas, T. T.: Ann Surg. **66**: 492 (Oct.) 1917.

which was fifteen and one half years ago, and in the last case this dislocation occurred three years after the operation and only two months ago.

Two dislocations since operation in one case; first dislocation, three years after operation, and second dislocation, seven years after operation, or eight years ago.

Acknowledged failures, two cases; refused or ignored direction after operation; probably hopeless without further operation.

One case still very hopeful without further operation, if he submits to direction which he has as yet ignored.

Every writer on this subject in the past, according to my knowledge, has regarded a dislocation following operation as establishing the failure of that operation. In my opinion, a proper understanding of the pathology of the original dislocation, of the recurrent dislocations and of the first dislocation following operation, shows us how to obtain, after this first postoperative dislocation, by the proper use of the pathologic changes, a positive and permanent cure without further operation; i. e., how to make the joint as strong as normal or stronger, if this is desirable. Of these thirty-three cases, we find that the operation itself was sufficient for a cure in twenty-two cases or 66⅔ per cent. In seven others, one dislocation after operation was necessary to supplement the operation, and in another, two dislocations. A successful result was thus obtained by the operation, directly or indirectly, in thirty of the thirty-three cases, or 91 per cent. The character of the work done by these eight patients since the last dislocation is convincing and makes these cases most interesting and important, because they solve the most important problem in the whole subject. They are briefly summarized as follows:

CASE 1.—An athlete, now a physician, was operated on more than fifteen and a half years ago, and within the first year, owing to violent wrenchings, had the sensations of momentary dislocations or subluxations, but has never had any further trouble, although he has continued his athletic exercises, and was thrown from a horse.

CASE 2.—A heavy weight student wrestler was operated on about a month after Patient 1, and afterward became the champion wrestler of his college; but in a wrestling bout three years after the operation he redislocated the same shoulder. He later went back to heavy gymnasium work and permitted himself to be photographed standing on his hands, because he was taking much greater risks in the gymnasium every day. Seven years after operation, he again dislocated this shoulder in a boxing match, but in the eight years since he has done "all kinds of athletic work" without any further trouble in the shoulder.

CASE 3.—A strong man, operated on more than eleven and a half years ago, redislocated the same shoulder when a horse fell on him seven months after the operation, but has never had any further trouble, although he has done "all kinds of hard work."

CASE 4.—A gymnasium instructor was operated on six years and nine months ago, and eight months later had a redislocation in a basketball game, but has had none since. He wrote recently that the shoulder operated on (left) felt just as strong as the right, and he used the two about equally, and that the motion was perfect. In publishing a report of this case in 1921 (compared to the preceding three cases, it was comparatively recent then), I said that I believed that this patient had as good prospects as the others had had in the corresponding stage. This is now confirmed.

CASE 5.—A college student was operated on, June 12, 1915, and he redislocated the same shoulder, Oct. 21, 1922, more than seven years later, while he was attempting to mount a horse without a saddle. As he jumped up to straddle the horse, it moved; his arms were stretched out in his effort to hold on to the horse when the dislocation occurred. This happened on a ranch in South Dakota, and the patient lived in Iowa, so he waited until he reached home five days later to have the arm bandaged in the Velpeau position, but held the arm close to his side during that time. Since then he has played tennis and golf with no ill effects, and can throw a ball. In tennis, he plays and serves without reservation. He still lacks confidence in the shoulder and wishes to know how to gain it. The answer is to take another dislocation if it can happen, and immobilize the arm properly afterward.

CASE 6.—An ex-service man and coal miner was operated on, June 2, 1920, and had a redislocation, April 24, 1921, but has had none since. March 23, 1925, he wrote that the affected arm could not be in better condition, that he has continued to work hard as a coal miner, and that he is a baseball player, throwing the ball with the hand of the affected side.

CASE 7.—A dental student was operated on, June 13, 1922, and had a redislocation, March 14, 1925. While watching a basketball game he suddenly realized that the ball was coming toward him, and he put up the right hand to stop it. The right shoulder had been operated on. The ball drove the arm into extreme abduction and external rotation, the most dangerous position for the occurrence of dislocation, which resulted. It was reduced immediately and the arm bandaged in the Velpeau position, but his physician released the arm from the bandage in nine days. Twenty-six hours afterward while lying on his back, he allowed the arm to fall into abduction and external rotation, and another dislocation occurred. After reduction and bandaging in the Velpeau position, he came to Philadelphia, a distance of about 200 miles. The arm was kept in this position for eight weeks, when the shoulder motion was considerably limited, this being the desired result. The prognosis given in 1921 for Case 4 can be given for this case now with equal confidence.

CASE 8.—A college student, aged 19, was operated on, June 17, 1921. Before operation, he would have as many as three dislocations in one basketball game. After operation, he continued to play basketball as before, and to do anything he wished to without fear. Nov. 10, 1924, he redislocated the same shoulder while wrestling, reduced the dislocation himself, but did not bandage the arm at the side at any time afterward. He has not engaged in athletics since then, but does his usual work without fear, lifting boxes and other weights above his head with the affected arm in full abduction and external rotation, the most dangerous position for the occurrence of a dislocation. In this position, he has some tightness in the axilla and a slight restriction of abduction, which adds to the ability of that joint to resist dislocation. I advised him to force the movements of the shoulder to the limit, and to welcome another dislocation if he can produce it. The chances are that he will not, but he has promised to permit me to direct his course afterward if another dislocation occurs.

The following two cases are failures and the third is likely to be:

CASE 9.—A young man was operated on, Jan. 5, 1913. Jan. 17, 1914, he redislocated the same shoulder with slight violence and again, Oct. 14, 1914. On neither occasion did he return to me for direction. At this time, I had not discovered the curative advantages of a postoperative dislocation, so that when the patient's physician sought relief for him, I urged a second operation, which was equally unsuccessful. This is the only nonepileptic case in which I performed a second operation, and probably it will be the last.

CASE 10.—A strong young man, operated on, May 25, 1918, was never seen by me after he left the hospital, about two months after the operation. Aug. 5, 1919, while repairing an automobile, in reaching for a difficult position, he wrenched and dislocated the same shoulder. He did not immobilize the arm afterward and soon had another dislocation, and after this more of them.

CASE 11.—A college teacher was operated on, Feb. 1, 1921, and after leaving the hospital at the end of a week, was not afterward seen by me. He redislocated the same shoulder, Sept. 11, 1922, while going through some setting up exercises. Jan. 4, 1925, the same dislocation recurred from sneezing while the hand was outstretched on a banister. An effort was made recently to see him, but without success. It is likely that the condition will become as bad as before the operation.

POSTERIOR DISLOCATIONS

Of the fifty-seven shoulders operated on, there were three with posterior dislocations in two patients, both men and epileptic. In three other men both shoulders were involved, but the dislocations were all anterior. Two were epileptic and one not epileptic. As the brief statistics show, anterior dislocations of the shoulder are very much more common than posterior, and it is a little interesting to note that in one case a posterior dislocation occurred on both sides. On the theory of chances, one of them should have been anterior; but while I have not seen or read of another bilateral posterior recurrent dislocation, I am inclined to believe that the occurrence of the same dislocation on the two sides is not an accident. I have many times produced an anterior dislocation of the shoulder on the cadaver by hyperabduction, never a posterior. Occasionally a typical fracture of the greater tuberosity of the humerus would be associated with the anterior dislocation thus produced. So far as I can recall, when I found a fracture of the tuberosity associated with the dislocation I always made a similar dislocation in the opposite shoulder and always obtained a similar fracture of the greater tuberosity with it. I could not avoid the impression that there was something in the anatomy or construction of the skeleton in that person or cadaver to favor the occurrence of this fracture with the dislocation. There is no attempt here to explain but to state an interesting fact.

According to Valtancoli,[5] Krönlein found one posterior among 207 shoulder dislocations, Finckl, five among 206, and Valtancoli, five among 140. Schlaepfer,[6] among 120 shoulder dislocations, found 113 (94 per cent.) anterior and seven (6 per cent.) posterior. When the findings of all four are added, we find eighteen posterior among 673 shoulder dislocations, or 2.7 per cent. My three posterior dislocations represent about 5 per cent. of the total fifty-seven shoulder recurrent dislocations.

The capsule is always lax where the humeral head leaves the socket, in the axilla in the anterior dislocation and under the spine of the scapula and acromion in the posterior, and a capsulorrhaphy must be done at the site of the laxity in order to contract it. The posterior operation was done in all three shoulders, which were in epileptic patients, and in none has there been a dislocation since operation. The function is perfect in two and nearly perfect in the other. The operation will be described and illustrated in connection with all the operations employed.

SNAPPING SHOULDER

Snapping shoulder, though rarely mentioned in textbooks on surgery, is a real and disabling condition. While I have observed and operated on three patients, with fair success in the first, and marked success in the second and third, and while I have a conviction, I would hardly feel justified in expressing a positive opinion regarding its basic cause. Kappis[7] adds two cases by Parona and Riedinger to the eleven already reported, and sums up as follows:

> The joint as a whole, by voluntary activity, is brought into an abnormal position so that it jerks away from a tense muscle with a snap, generally backward. In disease or paralysis, such a process may take place habitually and involuntarily. Habitual luxations can also sometimes be brought about voluntarily, and more rarely restored to position voluntarily, causing a kind of snapping. A sort of shoulder snapping is accounted for by the fact that the normal joint movements are inhibited by some intra-articular cause, and the inhibition is overcome by a sudden snapping.

While this does not explain the condition, it does emphasize its intra-articular character. Bristow[8] operated on a woman, aged 31, in whom the condition resulted from two falls at the age of 16, and found that:

> From the outer side of the short head of the biceps, muscular fibers were taking origin, running downward and outward to the long head. On abducting and rotating the arm, this fleshy muscle rode over the lesser tuberosity. About 1 inch [2.5 cm.] of this—that part coming in contact with the lesser tuberosity—was removed with a strip of the tendon of the short head of the biceps to which it was attached.

Recovery was uneventful, and the patient could afterward play tennis, which she had not been able to do before. The cause assigned here is entirely extra-articular, and since I believe the cause intra-articular, I would offer the following criticism: The riding of the short head of the biceps over the lesser tuberosity is a normal movement and is abnormal here only to the degree that the movement of the whole humeral head is abnormal, because of an abnormal joint condition.

Kappis observed that the humeral head generally snapped backward. In Case 14, there was a difference of opinion on this point. In Case 15, it was noted that the snap was upward and forward, which was the final conclusion in Case 14; but in Case 16, it was concluded that the snap was backward. In all three cases, there was the conviction that we were dealing with an intra-articular condition in the nature of an abnormal range of or a subluxating movement of the humeral head. In Case 14, two surgeons were responsible for the site of the capsulorrhaphy, but in Cases 15 and 16, I alone was responsible. I decided in favor of anterior or axillary capsulorrhaphy, because about 95 per cent. of my other and complete dislocations were anterior, and these were probably of the same type. Because of the uncertainty during the operation in Case 15, a posterior capsulorrhaphy was added with the hope that whichever was present it would be controlled. The end-result was perfect. In Case 16, although the snap seemed to occur backward, the anterior operation alone was performed, and a perfect end-result was obtained. Therefore, in future cases, I expect to do the anterior operation until the results do not justify it.

RECOVERY OF MOTION AFTER CAPSULORRHAPHY

The recovery of motion after a capsulorrhaphy needs very little discussion. I am never concerned in a nonepileptic patient or in an epileptic patient of good mentality. Only epileptic patients of impaired mentality preserve restricted movement, because they will not tolerate any pain and they do not appreciate the necessity for the necessary exercises. Indeed, when the relatives or friends of such patients or the attendants who care for them in institutions are asked about the result of the operation, they are usually enthusiastic, and do not seem to know that some patients cannot elevate the arm normally. Their attention has not been called to it because the patients do not complain, and because the occasion for full abduction rarely arises in their presence. Epileptic patients of good mentality, and especially those who must earn their livings, recover motion about as well as nonepileptic patients.

5. Valtancoli, G.: Chir. d. org. di movimento **9**: 171-188 (Dec.) 1924.
6. Schlaepfer, K.: Am. J. M. Sc. **167**: 244 (Feb.) 1924.
7. Kappis: Arch. f. Orthop. **20**: 554 (July 31) 1922.
8. Bristow, W. R.: J. Bone & Joint Surg. **6**: 53 (Jan.) 1924.

Examples of this are seen in the preceding case reports of posterior recurrent dislocations.

There is, however, real need for concern about too early return of motion after a capsulorrhaphy, so that I advise the patient to preserve some stiffness at least for five or six months, and am pleased if, at the end of a year, there is some tightness in the axilla on full abduction. There is some reason to believe that if, after a capsulorrhaphy in an epileptic patient the arm is held in the Velpeau position, preferably in a plaster cast, for three or four months, a recurrence would not follow and consequently a bone operation would not be necessary; but a high excision of the humeral head will positively stop all dislocations, and a Hildebrand reshaping of the glenoid cavity will probably do so. After the former, nearly full function can be recovered, and after the latter, probably full function. These operations will probably never be indicated except in epileptic patients, and in them only very rarely.

I have previously discussed the operations I have done for this condition except that for the posterior variety, and that will be described and illustrated here. In my first twelve shoulders, the axillary operation was done between the coracobrachialis muscle in front and the axillary vessels behind.[9] These were all anterior dislocations, and in all of this kind since, except a high excision in one shoulder of an epileptic patient and a deltopectoral capsulorrhaphy in one snapping shoulder, the capsulorrhaphy has been done just posterior to the axillary vessels.[10] The Hildebrand operation for reshaping the glenoid cavity [2] was done by the posterior route as described below and consists in chiseling away the posterior margin of the glenoid cavity, while the humeral head is in the anterior dislocated position and the cavity empty, until the anterior margin is abnormally raised above the posterior margin and offers an apparently insuperable obstruction to an anterior dislocation. The result in my case is exceptionally brilliant.[11] There has been no recurrence in the fifteen and a half years since, although the convulsions have continued to be violent and frequent.

TECHNIC OF POSTERIOR CAPSULORRHAPHY

The posterior capsulorrhaphy (Fig. 2) is done as follows: An incision about 6 inches (15 cm.) long is made from the spine of the scapula downward in the line of the fibers of the deltoid muscle, a little below the head of the humerus, or about midway between it and the lower or posterior margin of the deltoid. When made along the posterior margin of this muscle, too strenuous retraction forward of the deltoid flap is necessary for exposure of the capsule. The incision is deepened through the posterior fibers of the deltoid, and the underlying rotator muscles, infraspinatus and teres minor are exposed, and their fibers found running at about right rangles with those of the deltoid. The capsule lies under the infraspinatus and teres minor, and may be exposed between these two muscles, or perhaps more easily by splitting the fibers of the infraspinatus, making a muscle splitting incision not unlike the McBurney for appendicitis. One should not forget that the circumflex nerve is passing backward in the lower end of the wound to enter the deltoid about the center of its under surface, and from that point to radiate in all directions. After dividing the infraspinatus in the line of its fibers, and retracting the margins of this muscle as one retracts the margins of the internal oblique and transversalis in the McBurney incision, the capsule is exposed. It is divided about midway between its humeral and glenoid attachments, and parallel with both (Fig. 2), and the margins are overlapped with mattress catgut sutures, the arm being held in external rotation to relax this portion of the capsule. A continuous catgut suture for the infraspinatus wound, another for the deltoid, and silkworm-gut sutures for the skin close the wound without drainage. A gauze dressing and bandage are applied and the arm fixed at the side in full external rotation, preferably by a plaster cast. The Velpeau position gives perfect relaxation of the capsule for the anterior dislocation and axillary operation, but the opposite position is necessary to give as good relaxation for the posterior operation; i. e., full abduction and external rotation. But this is rather a difficult and uncomfortable position to maintain. As shown in the cases reported, I have tried this position, also full external rotation and half of full abduction (the arm on a level with the shoulder and the forearm upright), and in one case, the arm at the side of the body and in full external rotation (the forearm in line with the transverse axis of the body). The last was the most

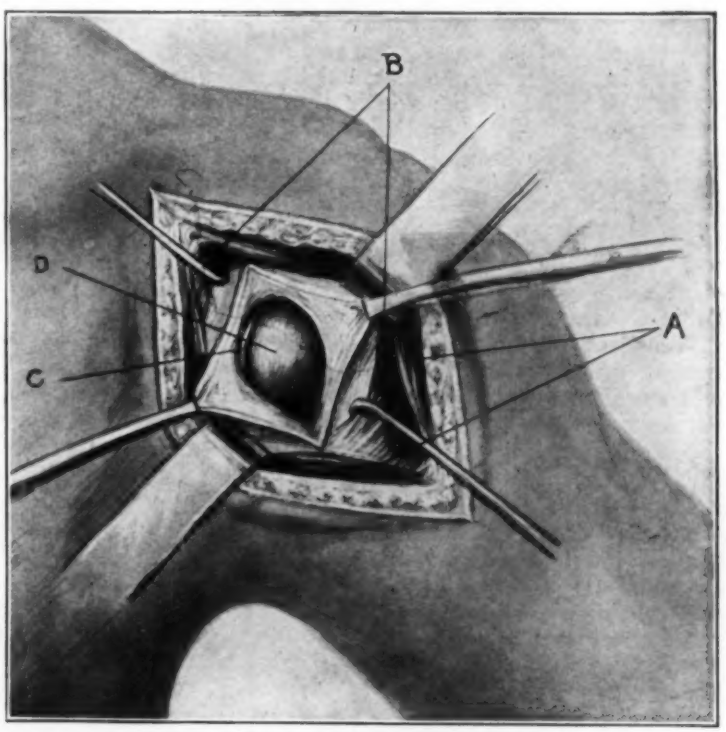

Fig. 2.—Exposure of shoulder joint posteriorly for overlapping of capsule for posterior dislocation or chiseling away the posterior margin of the glenoid cavity (Hildebrand) for a rebellious anterior dislocation, the head being dislocated forward out of the way during the operation: *A*, separated margins of the deltoid; *B*, separated margins of divided infraspinatus; *C*, posterior margin of glenoid cavity; *D*, posterior surface of humeral head and about the location of the groove usually found in the head in recurrent dislocations. The divided capsule margins held by tissue forceps are easily overlapped by mattress sutures.

9. Thomas, T. T.: Am. J. M. Sc., March, 1909; Recurrent Anterior Dislocation of the Shoulder, J. A. M. A. **54**: 834 (March 12) 1910.
10. Thomas, T. T.: Surg., Gynec. & Obst. (Jan.) 1914 (description); ibid. **32**: 291. (April) 1921 (illustrations).
11. Thomas, T. T.: Surg., Gynec. & Obst. **32**: 291 (April) 1921 (Case 6).

comfortable position, and as it gave as good end-results as the others, I expect to use it in the future.

CONCLUSIONS

1. A recurrent dislocation of the shoulder joint is the equivalent of an ununited fracture, in that abnormal motion is permitted at the site of both breaks in the skeleton. The treatment in both is to remove the abnormal motion.

2. The best method of accomplishing this purpose in the anterior recurrent dislocation is by an axillary capsulorrhaphy, which is one of the simplest, safest and most effective major operations in surgery, and very rarely requires hospitalization for more than one week.

3. Return of motion after a capsulorrhaphy, from ordinary use of the arm, is sometimes too rapid to permit complete cicatrization before the joint is exposed to full violence. Therefore, operative stiffness is to be preserved rather than feared. Three fourths of full motion at the end of three or four months is satisfactory, and some tightness in the axilla on full abduction of the arm at the end of a year is a good sign. Normal motion after a capsulorrhaphy always develops in a nonepileptic patient or in an epileptic patient with mentality enough to desire it.

4. A dislocation following operation in a nonepileptic patient is an advantage in that particular case. It proves that the operative cicatrization was not sufficient for the needs of that patient and must be reinforced by the new cicatricial tissue following the new dislocation. In only one case was a second dislocation necessary to complete the cure. In thirty-three nonepileptic shoulders, a single capsulorrhaphy was successful in twenty-two without a further recurrence; in seven cases after one recurrence, and in one after two recurrences. This operation was a failure in three cases because the patients failed to take advantage of the curative effects of the first dislocation following operation.

5. A single capsulorrhaphy stopped the dislocations permanently in ten of the eighteen shoulders in epileptic patients. In two more, two capsulorrhaphies were necessary. In four, a high excision of the humeral head and in one a reshaping of the glenoid cup were necessary to prevent the dislocations. In the remaining case two capsulorrhaphies failed and no bone operation was performed.

6. A snapping shoulder is a recurrent subluxation of the shoulder joint, probably of the anterior variety, as with the recurrent complete dislocations. An axillary or anterior capsulorrhaphy will probably cure in every anterior subluxation, and may cause sufficient general contraction of the capsule to prevent the snapping of a posterior subluxation. If it does not cure in any case, an added posterior capsulorrhaphy will probably complete the cure. This is important, because it may be impossible to determine which variety one is dealing with. In my opinion this is a more disabling condition than a recurrent complete dislocation, because the displacement and snapping back occurs many times a day, while the complete variety almost always occurs at much longer intervals, usually of weeks or months.

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ABSTRACT OF DISCUSSION

DR. DAMON B. PFEIFFER, Philadelphia: The treatment of recurrent dislocation of the shoulder still requires further efforts at standardization. There is as yet no general agreement on the rôle of the bone, the muscles and the capsule in the production of this disability. It may be said, however, that the bony changes in the head of the humerus and the glenoid cavity are generally secondary to the initial or subsequent traumatism and only occasionally a factor in predisposing to succeeding dislocation. It has been shown that the muscles of the shoulder girdle have a pronounced effect in producing redislocation, and numerous proposals have been made to alter the muscle balance in such a way as to obviate the dislocating force of the great adductors of the arm which in the hyperextended position exert a pull on the head toward the direction of dislocation. Utilization of these principles has had considerable success, notably in the Clairmont and the Sever operations. It is a fair criticism of all operations based on tenotomy or transplantation of muscle that they are mutilating to a certain degree and are at times followed by weakness or partial disability, which may, indeed, be of little moment compared with the dangers and disadvantages of recurrent dislocation, but are, nevertheless, not desirable. Dr. Thomas deserves great credit for his insistence on the laxity of the capsule as the common cause of recurrent dislocation, and for the development of a simple technic for exposure and removal of the redundant portion. The sagging and laxity of the antero-inferior portion of the capsule is the chief, if not the only, reason for the recurrence of dislocation. The operation of excision of the slack portion of the capsule, with or without plication, provided only that healing in the new position is allowed to become firm before new strain is placed on it, is simple and leaves no disability, as a legacy of the operative procedure itself. It is the operation of choice. It will cure the vast majority of cases. When there has been capsulo-articular separation or extensive drainage to the margin of the glenoid itself it may not suffice, but those cases must be relatively uncommon and are to be determined only by operation and best by trial of the simpler procedure.

THE HEALING OF ARTERIES AFTER DIFFERENT METHODS OF LIGATION

AN EXPERIMENTAL STUDY *

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Ligation of arteries has received a great deal of study since the time of Ambroise Paré. The healing of arteries after ligation in continuity was admirably described in 1886 by Warren.[1] In 1922, Leriche[2] of Lyons gave a very complete report of the remote results of ligations and resections of arteries from the functional point of view. The work of both these authors has been largely substantiated and confirmed in this study, which, however, is primarily concerned with a search for the best method of ligating a large artery so as to produce a permanent occlusion of the arterial channel.

The problem suggested itself to me a few years ago on hearing a verbal report of a patient with an aneurysm of the innominate artery who bled to death at a second operation after the innominate artery had previously been ligated. An attempt to open the aneurysm led to a terrific hemorrhage, which could not be controlled. Necropsy showed that the ligature had cut through and the arterial channel had been reestablished.

* From the surgical department of St. Elizabeth's Hospital.
* Read before the Section on Pathology and Physiology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Warren, J. C.: The Healing of Arteries, New York, William Wood & Co., 1886.

2. Leriche, M. R.: Résultats éloignés des ligatures et des résections artérieles, Association française de Chirurgie XXXI Congrès français de chirurgie, Paris, 1922.

A good many cases are reported in the literature in which, subsequent to ligation in continuity of one of the large arteries, the arterial lumen has been reestablished. No cases have been found in which this has occurred after multiple ligations with division of the artery.

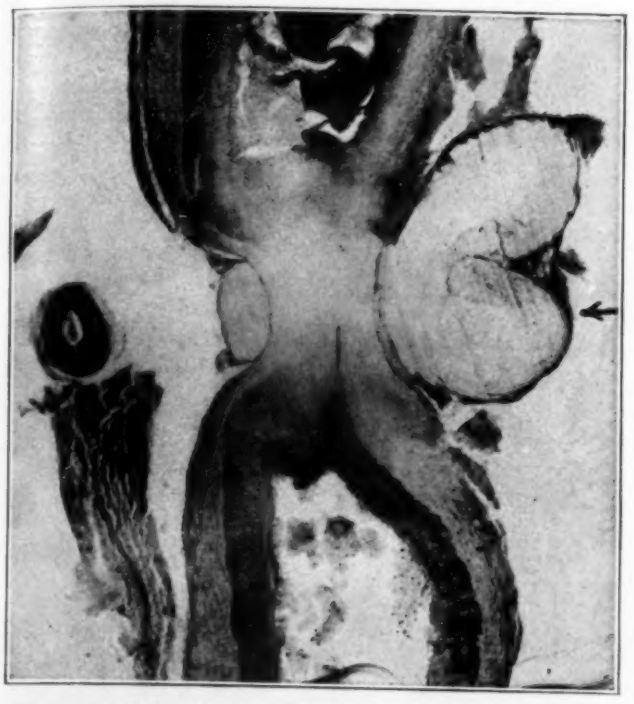


Fig. 1.—Longitudinal section of single ligature on femoral artery, 00 plain catgut, seven days after operation; magnification about 26 diameters.

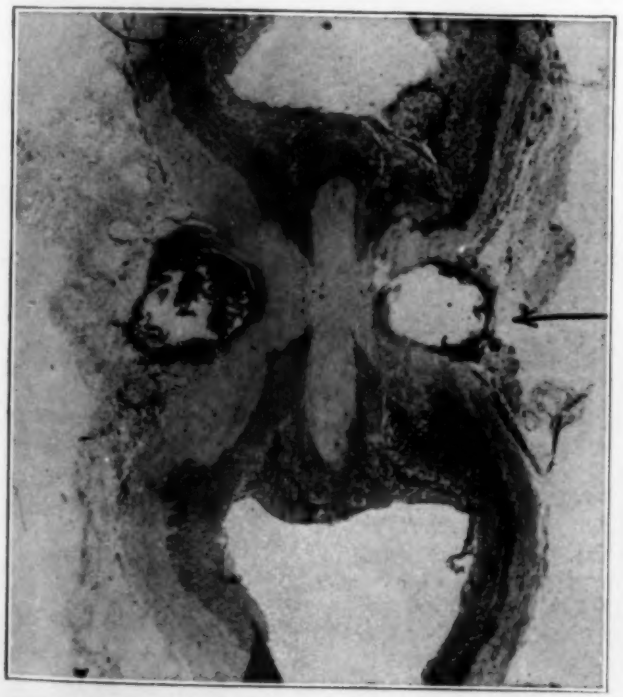


Fig. 2.—Longitudinal section of single ligature on femoral artery, medium linen, sixty-two days after operation; magnification about 30 diameters.

In 1907, J. Shelton Horsley [3] ligated in continuity the right external iliac artery of a patient who had a fistulous opening between the external iliac artery and vein, which communicated externally and was the source of occasional terrific hemorrhages. This condition followed a wound from a rifle bullet. Three weeks after the operation, the right common and external iliac arteries were ligated in continuity on account of recur-

Fig. 3.—Longitudinal section of double ligatures on carotid artery, 00 plain catgut, fifteen days after operation; magnification about 17 diameters.

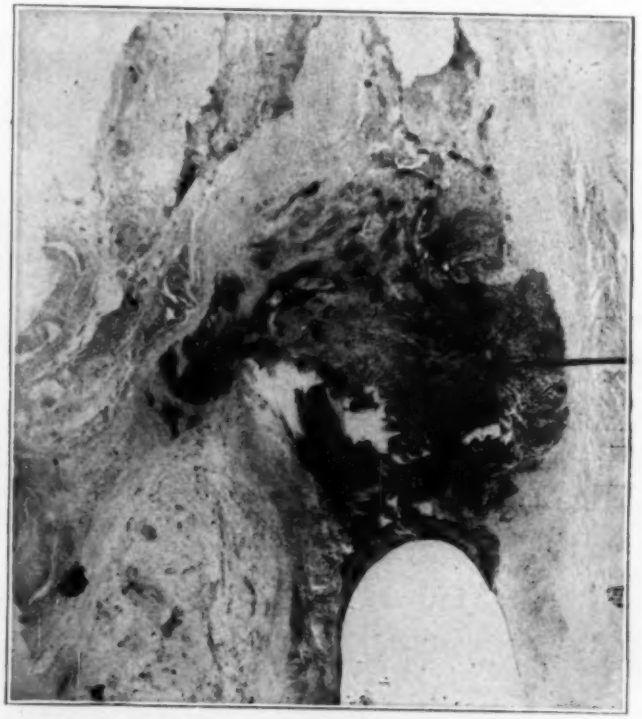


Fig. 4.—Longitudinal section of double ligatures on femoral artery, 00 plain catgut, forty days after operation; Constriction of the walls of the artery no longer exists; there is a tendency to canaliculization of the occluding thrombus; magnification about 25 diameters.

3. Horsley, J. S.: Personal communication to the author.

rent bleeding. Four weeks later there was another large hemorrhage, and the right common and external iliac arteries were again ligated in continuity, this time with silk instead of catgut. In four days the patient died of a sudden hemorrhage. Necropsy showed that the lumen of each vessel where the ligatures had been placed was partially reestablished.

Fig. 5.—Longitudinal section of single ligature on femoral artery, 00 plain catgut, thirty-five days after operation: A narrow band of tissue separates the lumens of the wide proximal portion and the contricted distal portion; magnification about 14 diameters.

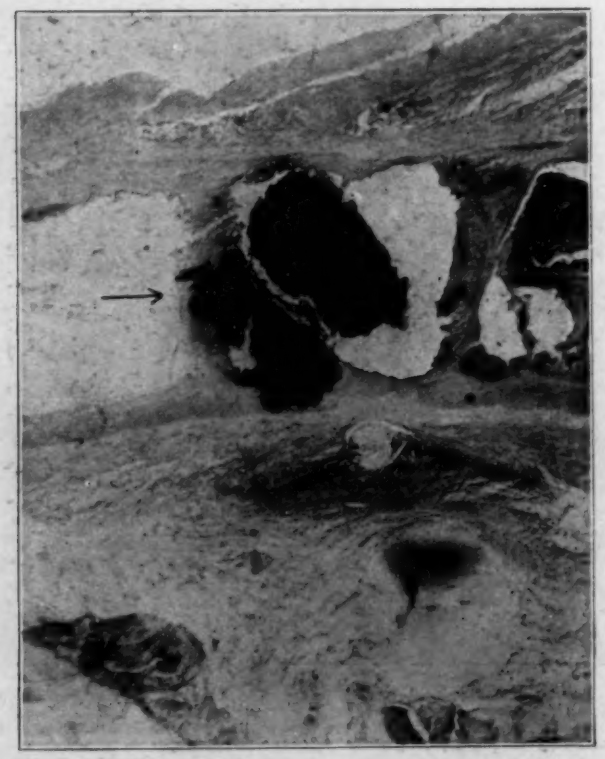


Fig. 6.—Longitudinal section of double ligatures on femoral artery, 00 plain catgut, forty days after operation: The arterial walls are no longer constricted by the ligature, and the lumen contains fresh blood clots with only a very narrow band of fibrous tissue occluding it; magnification about 25 diameters.

In 1914, Thompson [4] of Galveston reported a case of ligation of the innominate artery, two ligatures of "bobbin" (the narrow linen tape used for tying the umbilical cord in obstetrics) being tightly tied side by side. Sixty-seven days after operation the patient died, and at necropsy the arterial lumen at the site of the ligatures easily admitted the end of a fair sized probe.

In 1918, Hamann [5] of Cleveland reported a case of ligation of the abdominal aorta in which apparently complete occlusion by a firmly tied silk ligature was obtained. In three days a reappearance of the femoral pulse was noted. Death occurred six months later from hemorrhage from a bedsore, and necropsy showed the aorta to be only partially occluded.

Fig. 7.—Longitudinal section of same vessel as shown in Figure 6: This shows more distinctly the very narrow transverse band of tissue; the slight break in the fibrous band probably occurred during preparation of the section; magnification about 17 diameters.

Matas [6] reported a similar case in which double ligation of the abdominal aorta, with one-half inch woven cotton tapes, was performed for aneurysm at the bifurcation of the aorta. The patient died one year, five months and nine days after ligation. Necropsy showed that the original total occlusion had gradually been transformed into a narrow stricture. These five cases are cited to show the practical and clinical significance of this problem. Other such cases have been reported, and probably many more have been either unrecognized or not reported.

4. Thompson, J. E.: Ligature of the Innominate Artery for Cure of Subclavian Aneurysms, Tr. South. Surg. & Gynec. A. **27**: 110-137, 1914.
5. Hamann, C. A.: Ligation of the Abdominal Aorta; Ligation of First Portion of Left Subclavian, Ann. Surg. **68**: 2 (Aug.) 1918.
6. Matas, R.: Ligation of the Abdominal Aorta, Surg., Gynec. & Obst. **81**: 2 (Feb.) 1925.

EXPERIMENTS

Single and multiple ligations of arteries of dogs with and without section of the artery were made. The ligatures used were plain and tanned catgut, silk and linen. Some of the operations were done under ether and some under local anesthesia. All experiments were preceded by the administration of large doses of morphin, and every effort was made to prevent pain or suffering. The brachial, femoral and carotid arteries were used. In all, eighty ligated arteries were studied. Some of the incisions healed by primary union, but most had a mild superficial infection with slightly delayed healing. Secondary hemorrhage did not occur in any of the dogs.

LIGATURES

The end-results following ligation with plain and tanned catgut, silk and linen were about the same. The catgut absorbed more quickly and the silk and linen

Fig. 8.—Longitudinal section of distal ligature of femoral artery after double ligation with 00 plain catgut and section, fifty-eight days after operation; magnification about 17 diameters.

ligatures tended either to cut through into the arterial lumen or to loosen. About the nonabsorbable ligatures occasionally a small amount of thick purulent-like material collected, but more often the ligature was completely encapsulated in the surrounding fibrous tissue. Reid [7] of Cincinnati has shown that catgut should not be used for the ligation of large arteries, since it may give way before the necrosed vessel wall becomes completely healed by fibrous tissue. This observation was confirmed in these experiments.

LIGATIONS IN CONTINUITY

When a ligature is firmly tied, the intima and a portion of the media is ruptured, and the adventitia is compressed into a sheath around the constricted ends (Fig. 1). The earliest noted change is the formation of thrombi. The sizes of the thrombi vary greatly. They are larger when the vessel wall has been crushed or injured, and when sepsis occurs; otherwise the thrombi are small.

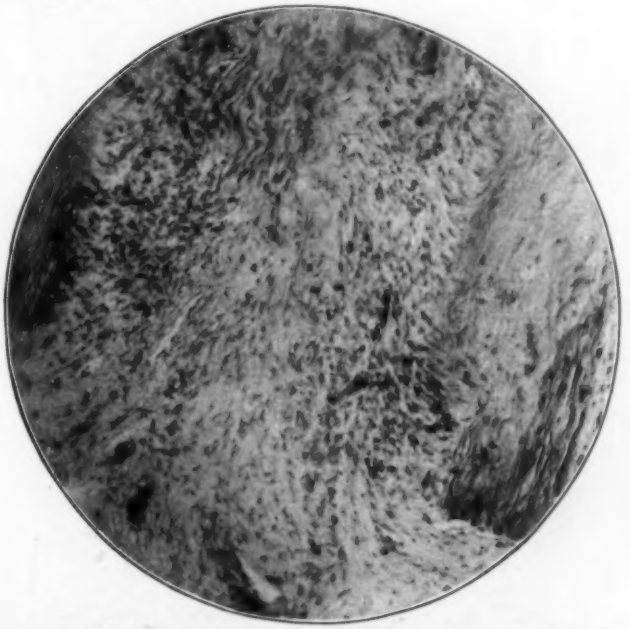


Fig. 9.—Higher magnification of longitudinal section of healed distal arterial end of same slide as Figure 8: dense fibrous tissue plug. This field is outlined on the low power photomicrograph; slightly reduced from a photomicrograph with a magnification of 150 diameters.

Fig. 10.—Longitudinal section of proximal ligature of femoral artery after double ligation with medium linen and section, sixty-one days after operation; magnification about 22 diameters.

During the first two to three days, an exudate and the swollen surrounding tissue bury the site of the ligature and form a callus for some distance above and below, depending on the amount of trauma and infection. This

7. Reid, M. R.: Partial Occlusion of the Pulmonary Aorta and Inferior Vena Cava with the Metallic Band: Observations on Changes in the Vessel Wall and in the Heart, J. Exper. Med. **40**: 3 (Sept. 1) 1924.

callus tends to protect the vessel from secondary hemorrhage. Soon the ligatured area is invaded by leukocytes, and the ligature either loosens or cuts through the adventitia (Figs. 2 and 3). If it cuts through, the

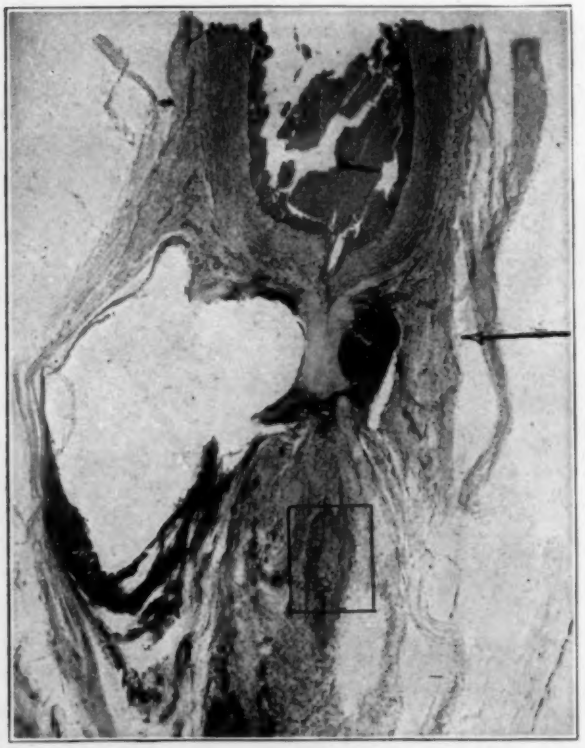


Fig. 11.—Longitudinal section of proximal ligature of carotid artery after double ligation with medium linen and section, sixty-four days after operation; magnification about 36 diameters.

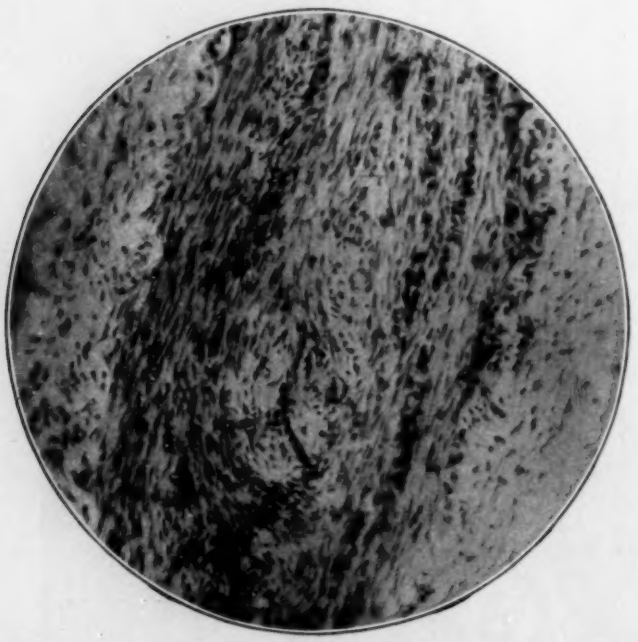


Fig. 12.—Higher magnification of longitudinal section of healed proximal end of same slide as Figure 11: dense fibrous plug. This field is outlined on the low power photomicrograph; slightly reduced from a photomicrograph with a magnification of 150 diameters.

two ends of the vessel separate. Once freed the arterial ends begin to expand, and granulation tissue grows into the thrombi, producing an internal callus. With the granulation tissue new blood vessels are formed, which also penetrate the thrombi and may by canaliculization partially restore the occluded portion (Fig. 4). This stage usually occurs about a month after ligation. The vessel ends retract as the excessive repair tissue is absorbed, and a narrow permanent cicatrix is formed which usually closes the ends of the vessel. The cicatrix consists of three layers. The inner layer is composed of endothelium formed by growth from the intima; next to this is a layer of muscular tissue developed from the media, and externally there is a connective tissue layer.

Reestablishment of the arterial channel may occur during any part of this healing process by absorption, relaxation, or "cutting through" of the ligature into the arterial lumen, accompanied by either a dislodgment or canaliculization of the thrombus (Figs. 5, 6 and 7). The larger the artery and the higher the arterial pres-

Fig. 13.—Longitudinal section of distal ligature of same artery as shown in Figure 11, sixty-four days after operation; magnification about 17 diameters.

sure, the greater is the tendency to a reestablishment of the arterial lumen. After an insufficiently tightened ligature, not crushing the arterial coats, the reestablishment of the arterial lumen is rapid.

The process of healing after double or multiple ligatures is essentially the same as after single ligation. In thirty-seven single ligations three arteries had their lumens partially restored, and in fifteen double ligations one artery had reopened.

DOUBLE OR MULTIPLE LIGATIONS WITH SECTION

If an artery is severed between ligatures, the stumps immediately retract and form small conical culdesacs. Within the arterial channel the process of healing is somewhat similar to the healing of arteries after ligation in continuity, though after section the intima of the conical stumps obtains an additional amount of nutrition from the surrounding raw tissue, and the

exposed stumps are soon filled with granulation tissue, which forms a plug. Whether the ligature is absorbed, relaxes, or cuts through into the lumen, this cicatricial plug has already sealed the arterial lumen (Figs. 8, 9, 10, 11, 12, 13 and 15). The same process takes place in both the proximal and the distal arterial stumps. This plugging of the exposed ends of the divided artery and original retraction of the stumps, from one to several centimeters from each other, makes the chances of reestablishment of the arterial channel apparently impossible. Sections and careful study of the tissue between these retracted arterial stumps have shown merely connective tissue and no attempt at canaliculization or reestablishment of the lumen (Fig. 14). In twenty-eight multiple ligations with division of the artery there was no instance of even a partial reestablishment of the arterial channel.

SUMMARY

1. In five cases cited there was reestablishment of the arterial lumen following ligation in continuity of a large artery.

2. Eighty single and multiple ligations of brachial, femoral and carotid arteries of dogs with and without section of the artery were done and specimens collected at various intervals from a few hours to seven months after operation.

3. Four of fifty-two ligations in continuity and none of twenty-eight ligations with section were followed by a partial reestablishment of the arterial channel.

4. In multiple ligations with section of the artery the ends retract, and the intima of each stump is exposed to the surrounding raw tissue, securing an additional amount of nutrition and forming a firm, permanent cicatricial plug.

Fig. 14.—Cross section of tissue between ends of artery shown in Figures 11 and 13. This is connective tissue and does not contain any trace of vessels which could reestablish the original arterial stream; slightly reduced from a photomicrograph with a magnification of 45 diameters.

CONCLUSIONS

The results of these studies indicate that, in order to insure a permanent occlusion of a large arterial channel, the best method of ligation is to apply two or more ligatures and to sever the artery between the ligatures, allowing the ends of the artery to retract. In large vessels it is better to apply three ligatures and to divide the artery between the two distal ligatures. By this procedure the proximal ligature takes up the impulse of the heart beat and permits the tissue within the grasp of the distal ligature to heal at rest.

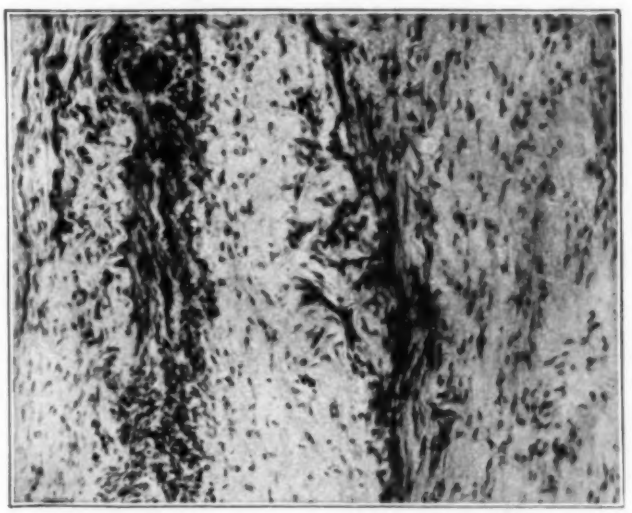


Fig. 15.—Higher magnification of longitudinal section of healed distal end of same slide as Figure 13: dense fibrous plug. This field is outlined on the low power photomicrograph; slightly reduced from a photomicrograph with a magnification of 150 diameters.

617 West Grace Street.

MELANOSARCOMA OF CHOROID WITH EXTENSION TO ORBIT

REPORT OF CASE *

EDWARD STIEREN, M.D.
PITTSBURGH

In malignancy of the eye and its adnexa, radium used alone or as an adjunct to surgical measures has proved to be of incalculable benefit. Recent writers report prompt and lasting cures from its use.

Aikins [1] speaks of a favorable outcome in two cases of sarcoma of the conjunctiva and one case of inoperable sarcoma of the orbit, as the result of radium treatment. Johnson [2] reports seven cases of carcinoma of the conjunctiva cured with radium emanations, and in his summary states that surgery usually fails to cure and actually assists the local and regional spread of the disease. Francis [3] reports a case of malignant lymphoma of the orbit in which radium was used after the growth had been removed by operation, with no recurrence in three years. Marcotty [4] reported a case of

* Read before the Section on Ophthalmology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Aikins, W. H. B.: Sarcoma of Conjunctiva, Canadian M. A. J. **13**: 654 (Sept.) 1923.
2. Johnson, F. M.: Treatment of Carcinoma of the Conjunctiva with Radium, Am. J. Ophth. **7**: 589 (Aug.) 1924.
3. Francis, L. M.: Malignant Lymphoma of Lacrimal Gland, Am. J. Ophth. **6**: 182 (March) 1923.
4. Marcotty, A. H.: Lymphadenoma of Orbit and Lacrimal Glands, Klin. Monatsbl. f. Augenh., 1922, p. 166.

bilateral lymphadenoma in which radium treatment was followed by prompt improvement. In glioma of the retina, Jacoby [5] reports three cases in which the use of radium is apparently proving of value, and Metzger,[6] who uses the term neuroblastoma, attributes to radium a cure. He makes the sage observation that there is no

Fig. 1.—Enlargement of eyeball and exophthalmos.

way of ascertaining macroscopically that the malignant process does not extend beyond the cut end of the optic nerve, and advises the prompt use of radium after every enucleation in this condition.

D. Y. and J. P. Keith [7] report a case of epithelioma of the cornea, in which the entire cornea was the color of limestone. Under the application of radium for five months, normal vision was obtained, and there was no recurrence nine months later. Wilder's [8] case of melanosarcoma at the limbus showed progress toward a cure under the use of radium.

REPORT OF CASE

Mrs. D. D., aged 40, an Italian, referred by Dr. J. A. Boale, Jan. 26, 1921, had recently had acute pains in the left eye on several occasions, and the eye had been blind for the past three or four months.

The right eye was normal; vision, 6/5; pupil, normal in size and reaction; media, clear and fundus negative; tension, 28 mg. McLean.

The left globe was moderately injected; pupil, dilated; tension, 60 mg. McLean. The anterior chamber was shallow and the lens clear. There was a grayish-brown, funnel shaped detachment of the entire retina. The eye did not transilluminate below in an area extending from the external to the internal rectus muscles, but transmitted light through the upper half of the sclera.

A diagnosis of intra-ocular growth was made, and the patient was urged to have the eyeball enucleated at once. This advice was ignored, and the patient was lost sight of until Oct. 3, 1922, twenty months later, when she appeared with the eye proptosed and enlarged, a portion of the sclera below protruding between the lids, and the globe practically fixed in the orbit. A fundus reflex could be obtained in the outer upper quadrant, the remainder of the vitreous chamber being filled with a brown mass. The lower two thirds of the eyeball, including the protruding scleral portion, did not transmit light.

A generous enucleation, including all the apparently involved orbital tissues, was performed the next day, and the tissues were loosely approximated with catgut sutures. A laboratory report of melanosarcoma having been received, two days later, radium needles, 75 mg., were implanted deeply into the orbit, held in place with moist cotton sponges, left in situ five hours. As a result, the tissues in the bottom of the orbit became charred, and eventually sloughed out. Healthy granulations followed, and the orbit healed entirely in four months, when a glass eye was inserted, which has been worn with comfort and good cosmetic effect ever since.

There has been no local recurrence or distant metastasis up to the present time.

COMMENT

The use of radium in malignancy, as well as in various benign affections of the eye and its appendages, is far past the experimental stage. Various authorities,

Fig. 2.—Protrusion of sclera.

notably Ewing,[9] Withers [10] and Lane,[11] have greatly advanced our knowledge of the principles and practice of radium therapy.

5. Jacoby: Radium in Treatment of Glioma, Klin. Monatsbl. f. Augenh., 1922, p. 180.
6. Metzger, E. L.: Neuroblastoma of Retina, Klin. Monatsbl. f. Augenh. **69**: 547, 1922.
7. Keith, D. Y., and Keith, J. P.: Epithelioma of the Cornea, Am. J. Roentgenol. **9**: 337 (June) 1922.
8. Wilder, W. H.: Melanosarcoma of Limbus, Am. J. Ophth., 1923, p. 693.
9. Ewing, James: Tumors of Nerve Tissue in Relation to Treatment by Radiation, Am. J. Roentgenol. **8**: 497 (Sept.) 1921.
10. Withers, Sanford: Value of Radiation Therapy in Ophthalmology, Am. J. Ophth. **7**: 514 (July) 1924.
11. Lane, Laura A.: Radium in Ophthalmology, J. A. M. A. **83**: 1838 (Dec. 6) 1924.

ABSTRACT OF DISCUSSION

DR. ARTHUR J. BEDELL, Albany, N. Y.: In a series of forty sarcomas of the choroid, only one showed a definite extension into the orbit. This was in a man, aged 45, who five years before the first examination was said to have had a detachment of his retina resulting from an injury. The left eye was blind and the pupil was irregularly oval, 7.5 mm. The nasal side of the vascular iris was adherent to a cataractous lens, Schiötz 35. The Wassermann reaction was four plus. He had had two courses of arsphenamin. Under physostigmin, tension became normal and the patient was comfortable. Two months later the eyeball became injected, with slight exophthalmos and some limitation of motion in all directions. The eye was enucleated. A large mass was found extending from the globe to the optic foramen. In gross appearance it suggested melanotic sarcoma, and microscopically was found to be of the pigmented spindle cell type. Four months after the operation a nodule was found in the orbit. After a complete exenteration, he was given 1,500 mg. hours of radium. He died twelve days later, after having had a severe pain in his chest. It was impossible to exclude gumma; hence the delay in operation. Dr. Feingold has just given me the history of a 5 year old boy from whom one eye was removed for an intraocular tumor which showed several protuberances like the heads of rivets on the outside of the sclera. The tumor was a leukosarcoma. Dr. R. F. French of Marshalltown, Iowa, has kindly sent me the history of a man, aged 68, whom he observed for ten years. When first seen there was a definite loss in the lower field of the right eye. Three and one-half years later, the tension with the Gradle instrument was 61 and the lens was opaque. He was advised to have the eye trephined, but did not accept the operation for two months. Fifteen months later there was a recurrence of pain, which was controlled by phyosostigmin. About eight years after the first examination, a new growth extended through the sclera and encircled the external rectus muscle. The eye was enucleated and the growth found to be an highly melanotic spindle cell sarcoma involving the entire choroid and extending through the sclera posteriorly. I believe it unwise to depend on radium, and feel that the safest procedure is to give radium before and after operation.

DR. E. C. ELLETT, Memphis, Tenn.: A woman, aged 48, was seen in 1921, having been blind in the left eye for three years. The pupil was dilated and fixed, the lens opaque, tension plus 2, and the eyeball protruded, the exophthalmos amounting to 10 mm. The conjunctival vessels were very large and tortuous, and there were new vessels in the iris. Downward and outward there was a large dark subconjunctival mass (scleral staphyloma) extending from 2 to 6 o'clock. The orbit seemed to be free of any growth, and ocular rotations were limited. Transillumination showed a clear eyeball except where the light was over the the dark mass. The eye was removed and the dark mass was found to be part of a growth which had burst through the sclera. All parts of the growth were removed and radium was applied. There has been no recurrence. The tumor was reported to be a fibroblastoma, moderately pigmented (melanosarcoma).

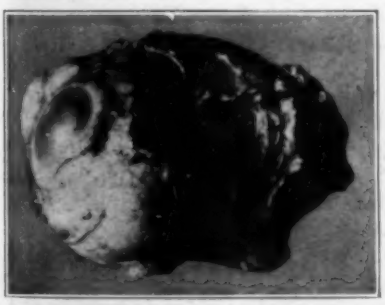


Fig. 3.—Protrusion of sclera and tumor mass.

DR. E. E. BLAAUW, Buffalo: The question of perforation of the bulb and extension into the orbit is not such a rare condition. Enough cases have been reported in the literature. One phase in this process has not been touched on frequently. Well known is the propagation inward of a new growth at the limbus and adjacent region; but when an extensive involvement of the orbit with a rather unimportant development inside the bulb is found, the possibility of a primary extrabulbar origin should be taken into consideration. Ballaban and Mulock Houwer have reported such a condition, and the latter has particularly drawn attention to this development, mentioning that chromatophores are found at the exit of the posterior ciliary nerves and vessels or in nevus of the posterior scleral surface (Axenfeld).

DR. W. H. WILDER, Chicago: If it is proper in this connection, I should like to raise the point that we are too frequently inaccurate in our records of the treatment of these cases by either radium or the roentgen ray. We frequently see reports of cases of treatment of malignant growths with radium in which we are not told how the radium was used, nor whether it was by emanations or radium metal. In communications on this subject the treatment should be more accurately described. If radium emanations were used it should be so stated and the length of time in millicurie hours; but whether metal or emanations are used, the amount, the time, the distance from the growth, and the kind of screen used should all be stated to enable us to arrive at some definite conclusions as to the therapeutic effect of these agents.

Fig. 4.—Tumor mass extension into the orbit.

DR. EDWARD STIEREN, Pittsburgh: When radium was used in this case, almost three years ago, we knew nothing about millicurie hours or radium hours. We were much in the dark as to what form to use, the time and how much to use. In this case, 75 mg. in needles was implanted for two hours. Now, thanks to the radium workers, we can determine much more accurately just how much to give in these various cases.

DEEP ROENTGEN-RAY EXPOSURE

AS AN AID IN THE DIFFERENTIAL DIAGNOSIS OF MEDIASTINAL TUMORS *

WILLIAM A. EVANS, M.D.
AND
TRAIAN LEUCUTIA, M.D.
Roentgenologist and Resident Roentgenologist, Respectively, Harper Hospital
DETROIT

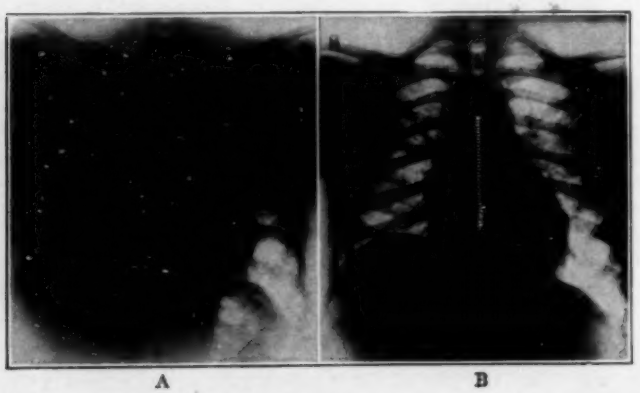
The accurate diagnosis of mediastinal tumors is closely connected with the discovery and development of the science of roentgenology. A review of the literature previous to the diagnostic application of the roentgen ray reveals that the clinical diagnosis of mediastinal tumors, and especially their differentiation from lung tumors, was a rare occurrence. Indeed, all the reports, starting with Morgagni's [1] first description of an ulcus cancrosum of the lung in 1708, and continuing as far as Hare's [2] treatise on affections of the mediastinum, in 1889, were based on gross pathologic findings, and only since 1871 (Langhans [3]) have they been based also on the microscopic findings; but in all instances the clinical diagnosis of the disease remained vague and uncertain. The similarity of the symptom complex of mediastinal tumors and of lung lesions made the problem especially

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Morgagni, J. B.: De Sedibus et Causis Morborum per Anatomen Indignatis, 1708.
2. Hare: Affections of the Mediastinum, Philadelphia, 1889.
3. Langhans, T.: Primärer Krebs der Trachen and Bronchien, Virchows Arch. f. path. Anat., 1871, p. 53.

difficult. Since Hare's work, however, the interest in the subject has grown to such an extent and the literature has become so extensive that Christian,[4] in 1902, was able to collect reports of a hundred cases of sarcoma of the mediastinum and in 1912 Adler [5] could tabulate 374 cases of carcinoma and ninety cases of sarcoma of the lung. Nevertheless, the methods available for the clinical diagnosis were even at that time inadequate, and, as Wessler and Jaches [6] remark, "The diagnosis of mediastinal tumor was considered a brilliant accomplishment and a clinical *tour de force*." A new method of examination was more than hoped for. Adler himself writes with regard to this, "X-rays have become a most remarkable and efficient aid to diagnosis in general . . . and there exists a well founded hope . . . that with the systematic and proper application of rays to the exploration of the chest the diagnosis may be assured, when no other means will give equally certain results."

Since that time many well known roentgenologists, such as Baker,[7] McMahon and Carman,[8] Barjou,[9] Christie,[10] DeWitt,[11] Kahn,[12] Childs,[13] Hall,[14] Rowe,[15] Gaarde,[16] Kahn and Sloan,[17] LeWald [18] and others have brought the method of the roentgenologic examination



A B

Fig. 1.—*A*, large lymphosarcoma of the mediastinum, producing marked pressure symptoms; *B*, ten days following roentgen-ray exposure, the lesion has entirely disappeared.

of the chest to such perfection that the diagnosis of mediastinal tumor now can be made with certainty in the majority of cases. Furthermore, by combining the radiologic examination with a thorough clinical examination,[19] laboratory tests, bronchoscopy and—if necessary—esophagoscopy, certain conclusions can be drawn also with regard to the type and nature of the tumor. Thus, inflammatory conditions, such as acute mediastinitis, mediastinal abscess, tuberculosis, and syphilis of the mediastinum or aneurysm of the aorta and great vessels in the majority of the cases can easily be differentiated from the true neoplastic tumors. But there still remains the problem of differentiating the true neoplasms among themselves, especially since they form the majority of the pathologic processes occurring within the mediastinum. If there is extension of the new growth to the regional lymph glands or some remote part of the body, biopsy can be performed and the diagnosis thus established. However, if the lesion is localized to the mediastinum itself, often all available methods will fail to reveal the true type of the tumor. In consequence, no accurate plan of treatment can be determined, especially with regard to whether radiation therapy should be used or whether the very dangerous procedure of thoracic surgery should be undertaken.

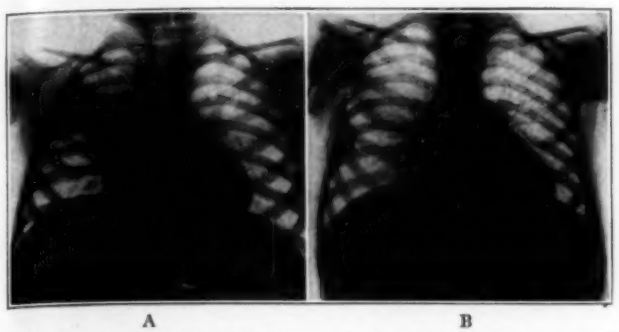
In studying the radiosensitivity of the different normal and pathologic cells toward radiation, we have tried to find whether or not the selective action of the roentgen rays on the different cells could be used as an index of the type of tumor irradiated; this would enable us to form conclusions with regard to the nature of the different mediastinal tumors. Fortunately enough, the mediastinum contains tissues that give rise to tumors occupying positions far apart in the large scale of radiosensitivity of the cells. In administering a standard quantity of radiation over these tumors, because of the different response, there will be a variation in the reduction of the size of the tumor in the time unit. This we are able to measure.

TECHNIC

The following is our technic: After the presence of mediastinal tumor by the methods enumerated above is established and the possibility of an inflammatory condition is excluded as far as possible, we first take a roentgenogram of the chest in a standard position, using a standard technic (the usual short time exposure at 40 inches distance). Then we administer a homogeneous dose of from 90 to 100 per cent. skin unit dose over the tumor mass by using rays of short wave length (in our case 0.137 Angström unit, obtained by a current of 200,000 volts and by a filtration of 1 mm. of copper and 1 mm. of aluminum). We have chosen from 90 to 100 per cent. skin unit dose because this is the optimum dose for the majority of tumors, and therefore it acts at the same time as a treatment dose. Following the exposure, we take, by using the standard factors, check-up plates at different intervals; namely, ten days, three weeks, six weeks, and thereafter at intervals of three months, and we compare the size of the tumor on each of these plates with the size of the tumor on the original plate. The rate and amount of reduction in the size of the mass will be different according to the type of the tumor. Of course, we realize that while the decrease in the size of the growth is the direct result of the effect of the rays on the tumor cells themselves, there are other factors, such as local tissue reaction, or increase or decrease in the general resistance mechanism of the organism, that

4. Christian: J. M. Res. **7**: 54, 1902.
5. Adler, I.: Primary Malignant Growths of the Lungs and Bronchi, London, Longmans, Green & Co., 1912.
6. Wessler, H., and Jaches, L.: Clinical Roentgenology of Disease of the Chest, Troy, N. Y., the Southworth Company, 1923.
7. Baker, L. F.: The Neoplastic Pneuopathies, Monographic Medicine **2**: 543, 1916.
8. McMahon, F. B., and Carman, R. D.: The Roentgenological Diagnosis of Primary Carcinoma of the Lung, Am. J. M. Sc. **155**: 34-37 (Jan.) 1918.
9. Barjou, F.: Radio-Diagnosis of Pleuro-Pulmonary Affections (translated by Honegi), New Haven, Yale University Press, 1918.
10. Christie, A. C.: The Diagnosis of Primary Tumors of the Lung, Am. J. Roentgenol. **8**: 97 (March) 1921.
11. DeWitt, C. H.: Sarcoma of Mediastinum, J. Radiol. **3**: 27 (Jan.) 1922.
12. Kahn, M.: X-Ray Studies of Mediastinal Shadows, with Especial Reference to Dermoid Cysts, J. Radiol. **3**: 93-97 (March) 1922.
13. Childs, S. B.: New Growths within the Chest: X-Ray Diagnosis, Am. J. Roentgenol. **10**: 175 (March) 1923.
14. Hall, J. N.: New Growths Within the Chest, Am. J. Roentgenol. **10**: 182 (March) 1923.
15. Rowe, E. W.: Tumors of Mediastinum, J. Radiol. **5**: 190-193 (June) 1924.
16. Gaarde, F. W.: Diseases of the Mediastinum: Clinical Differentiation of Case with Abnormal X-Ray Shadows in Mediastinum, M. Clin. N. Am. **8**: 1235-1246 (Jan.) 1925.
17. Kahn, M., and Sloan, M. F.: X-Ray and Clinical Study of Some Pulmonary Lesions, Radiology **4**: 198 (March) 1925.
18. LeWald, L. T.: New Growths of the Lung; Their Classification, Characteristics and Differential Diagnosis, Radiology **4**: 212 (March) 1925.
19. Hamilton, C. E.: Diseases of the Mediastinum and Its Contents, Am. J. M. Sc. **167**: 888-899 (June) 1924. Phillips, John: Differential Diagnosis of Diseases of the Mediastinum, J. A. M. A. **78**: 1355-1363 (May 6) 1922. Mix, C. L.: Full Discussion of Mediastinal Tumors, Both Benign and Malignant, with Classification, Symptomatology and Autopsy, M. Clin. N. Am. **3**: 1507 (May) 1920. Lailer, J.: Tumors of the Mediastinum, ibid. **6**: 899-909 (May) 1924.

may accelerate or retard the reduction of the mass. However, as stated above, the mediastinal tumors originate from cells of such widely different radiosensitiveness that, in attempting to differentiate them, the changes produced by the secondary reaction may be neglected. For the same reason, we do not attempt to calculate the reduction in the size of the tumor in mathematical figures, but merely content ourselves with expressing it in the arbitrary form of biologic response.



A B

Fig. 2.—*A*, mediastinal involvement in lymphatic leukemia; *B*, ten days following roentgen-exposure, the lesion has entirely disappeared.

TYPES OF TUMORS

In studying mediastinal tumors from a pathologic standpoint, we find that they are primary or secondary. The diagnosis of secondary mediastinal tumors as a rule causes no difficulty, because they are of the same nature as the mother tumors. The primary tumors of the mediastinum may originate in the lymph nodes, connective tissue, thymus or the thyroid gland. They may be benign (fibroma, adenoma, lipoma, chondroma, myoma, neuroma, etc.) or malignant. The malignant tumors may be:

1. Lymphomas (lymphosarcoma, pseudoleukemia, lymphatic leukemia, Hodgkin's disease).
2. Sarcomas, originating from the areolar connective tissue (fibrosarcoma, spindle cell sarcoma, alveolar cell sarcoma, etc.).
3. Carcinomas, mostly of thymic or thyroid origin.
4. Dermoid cysts and teratomas.

According to their occurrence, the most common primary mediastinal tumors are those originating in the lymph glands (malignant lymphomas). Second to these in frequency are the sarcomas of the areolar connective tissue and carcinomas, especially those of thymic origin, since many consider the sarcomas of the thymus of epithelial origin and place them among carcinomas. Dermoid cysts and solid teratomas are rare. Smith and Stone [20] could collect reports of only 125 cases in the whole literature. Benign tumors of the mediastinum are exceedingly rare.

In explaining the response of these different tumors toward radiation, we find that the general laws of cellular radiosensitivity hold good:

1. The more embryonal and undifferentiated the type of the cells, the greater the response to radiation (Tribondeau-Bergonié law).
2. Dividing mytotic cells are from eight to fifteen times more vulnerable than when at rest (Mottram).
3. Hyperchromatic cells are more sensitive than cells poor in chromatin.
4. Tumors rich in paraplastic structures are more resistant to radiation than cellular tumors.
5. Tumors well supplied with blood and lymph vessels respond more readily to radiation than tumors consisting of solid cell masses.

In accordance with these laws, mediastinal tumors originating from the lymph nodes will respond best to radiation, and tumors originating from the proliferation of the lymphocytic element will respond more readily than tumors originating from the proliferation of the reticulo-endothelial cell element. Benign tumors, on the other hand, because of their mature adult type, will show little or no response to radiation. Sarcomas, carcinomas and teratomas will occupy an intermediate position. There will be a more or less pronounced initial response, but later, unless further exposures are given, recurrence of the disease will follow.

RULES FOR TREATMENT

In practice, we believe we can establish the following rules:

1. Tumors originating from the proliferation of the lymphocytic cell element of the mediastinal lymph glands or of the thymus, such as lymphosarcomas, thymomas (usually lymphosarcomas), pseudoleukemia, lymphatic leukemia and simple lymphomas, entirely disappear within from four to ten days following the administration of from 90 to 100 per cent. skin unit dose of roentgen rays over the tumor mass. If there is no further extension of the disease at the time of the treatment, patients will remain well; but if the lesion has already microscopically invaded other parts or organs of the body, later new manifestations of the disease occur and the patients may die as a result of these manifestations. In no instance have we seen a local recurrence in the group of tumors mentioned, if the lesion once had disappeared.

A B C

Fig. 3.—*A*, Hodgkin's disease, with the mediastinal manifestation only; *B*, ten days following roentgen-ray exposure, the tumor has reduced to about one half of the original size; *C*, six weeks following roentgen-ray exposure, the tumor has entirely disappeared.

Figure 1 *A* shows a very extensive lymphosarcoma of the mediastinum, producing marked pressure symptoms, with resulting edema of the face and very marked dyspnea. The condition of the patient was so grave that oxygen inhalation had to be administered during the time of the roentgen-ray exposure. Figure 1 *B* shows the condition ten days following the exposure, when the lesion had entirely disappeared. Later there was extension of the disease to other parts of the body, so that the diagnosis could be confirmed by biopsy; but the

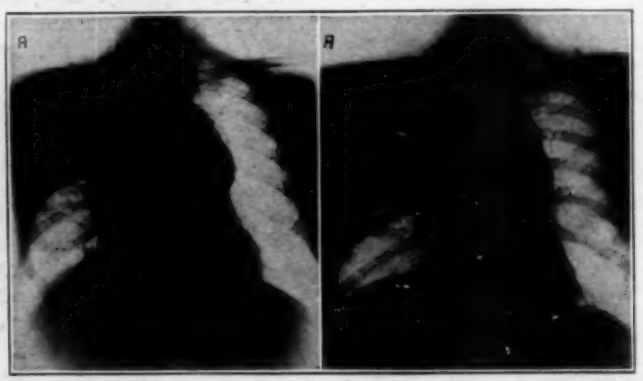
20. Smith, L. W., and Stone, J. S.: Tumors of Mediastinum in Children, Ann. Surg. **79**: 687-709 (May) 1924.

mediastinum remained clear. Figure 2 shows a case of mediastinal involvement in lymphatic leukemia. The mediastinum cleared up within ten days following the roentgen-ray exposures.

The further differentiation of these various lymphatic tumors is based on clinical and laboratory examination. Simple lymphoma is slow growing and of benign character. A thymoma—especially in the early stage—is located in the upper mediastinum and forms a pyramid capping the pericardium. A blood count will clear up the origin of the mediastinal involvement in case of lymphatic leukemia. The mediastinal manifestation of pseudoleukemia, especially if localized to this one region, cannot be accurately differentiated from lymphosarcoma, but the pathologic affinity and the clinical course of these two diseases are so closely similar that many authors regard them as manifestations of the same disease.

2. Tumors originating from the proliferation of the reticulo-endothelial cell element of the mediastinal lymph glands (Hodgkin's disease, Sternberg's type of hyperplastic tuberculosis, or pure endothelioma) will reduce within ten days following the treatment to about half of the original size, and will entirely disappear within from five to six weeks following the exposure.

Figure 3 *A* shows a mediastinal tumor, which was the only manifestation of a Hodgkin's disease. A clinical or roentgenologic differentiation from lymphosarcoma was impossible. The patient had the symptom complex of localized mediastinal tumor, and his condition was so grave that oxygen inhalation had to be administered during the roentgen-ray exposure. Figure 3 *B* shows the entire disappearance of the lesion, six weeks following treatment. Later there was extension to the supraclavicular glands (Fig. 3 *C*), but this also was successfully treated and the patient has remained well for a period of almost three years.



A B

Fig. 4.—*A*, aneurysm simulating mediastinal tumor; *B*, nine months following roentgen-ray exposure, the tumor remained uninfluenced by radiation.

Sternberg's type of hyperplastic tuberculosis shows the same response toward radiation, but, as a rule, there is a multiple involvement of the glands, so that a clinical or pathologic differentiation is possible. Endotheliomas of the mediastinum are exceedingly rare.

3. Other primary malignant tumors of the mediastinum, such as sarcomas originating from the areolar connective tissue (fibrosarcoma, large round cell sarcoma, alveolar cell sarcoma, etc.), or carcinomas or teratomas show a more or less pronounced reduction in size following the administration of a 90 to 100 per cent. skin unit dose, but they rarely disappear at the period of six weeks following exposure. In such cases the irradiation aids us in establishing the fact that we are dealing with a malignant tumor, but no accurate diagnosis can be made with regard to the type of the tumor.

4. Benign tumors of the mediastinum (lipoma, chondroma, fibroma, adenoma, myoma, neuroma, dermoid cysts, etc.), or pseudotumors (aneurysm, encysted pleural effusion or chronic abscess) remain uninfluenced by roentgen-ray exposure. Except for aneurysm, which can be excluded by clinical examination, surgical intervention is indicated in these cases. Therefore, a preliminary trial exposure in order to eliminate malignancies is of great importance.

Figure 4 *A* shows an upper mediastinal tumor that was first thought to be a sarcoma (probably lymphosarcoma). One hundred per cent. skin unit dose of radiation was administered over the tumor in order to test its radiosensitivity. Plates taken six weeks, three months and again nine months later (Fig. 4 *B*) fail to reveal any change in the size of the tumor. In consequence, a diagnosis of aneurysm with bronchostenosis [21] due to pressure was made.

CONCLUSIONS

The variation in the sensitivity of the different tumor cells toward radiation, usually given for therapeutic purposes, enables us to draw certain conclusions with regard to the type of tumor, in case no accurate clinical or pathologic diagnosis can be made.

In administering a standard quantity of radiation over different growths, there will be, because of the selective action of the rays, a variation in the reduction of the size of the tumors in the time unit, which we are able to measure. According to the rate of reduction, we are able to classify the mediastinal tumors in the following groups:

1. Tumors originating from the proliferation of the lymphocytic cell element of the mediastinal lymph glands or of the thymus (such as lymphosarcomas, thymomas, pseudoleukemia, lymphatic leukemia and simple lymphomas). These tumors entirely disappear within four to ten days following the administration of a 90 to 100 per cent. skin unit standard dose of roentgen rays over the tumor mass.

2. Tumors originating from the proliferation of the reticulo-endothelial cell element of the mediastinal lymph glands and thymus (Hodgkin's disease, Sternberg's type of hyperplastic tuberculosis, endothelioma). These tumors are reduced within ten days following the administration of a 90 to 100 per cent. skin unit dose to about one half their original size, and then entirely disappear within six weeks following the exposure.

3. Other primary tumors of the mediastinum, such as sarcomas, originating from the areolar connective tissue (fibrosarcoma, large round cell sarcoma, alveolar cell sarcoma, carcinoma of the thymus or thyroid glands and teratomas). These tumors show a more or less pronounced reduction in size following the administration of the 90 to 100 per cent. standard skin unit dose, but they rarely disappear at the period of six weeks following exposure. In such cases, the radiation helps us in establishing the fact that we are dealing with a malignant tumor, but no accurate diagnosis can be made with regard to the type of tumor.

4. Benign tumors of the mediastinum (lipoma, chondroma, fibroma, adenoma, myoma, neuroma, dermoid

21. Golden, Ross: The Effect of Bronchostenosis upon the Roentgen-Ray Shadow in Carcinoma of the Bronchus, Am. J. Roentgenol. 13:21 (Jan.) 1925.

cysts, etc.) or pseudotumors (aneurysm and encysted pleural effusion, chronic abscess). These tumors are very little or not at all influenced by radiation.

A further differentiation of the tumors of the foregoing groups is possible in the majority of instances by clinical or laboratory examination except for Group 4, in which surgical intervention is indicated.

110 Professional Building.

ABSTRACT OF DISCUSSION

DR. E. C. ERNST, St. Louis: Mediastinal tumors are not infrequently almost impossible of correct diagnosis, even though every conceivable clinical and the usual laboratory aid have been taken advantage of. Under such circumstances, the roentgen ray occasionally proves valuable, diagnostically and therapeutically. Mediastinal pathologic changes do not always present characteristic fluoroscopic visualizations; in fact, the many noncharacteristic variations of the outline of these shadows have been our chief diagnostic handicap in difficult and doubtful cases. In these cases, we employed rather mild dosage, but we soon found out that this was an error. I am glad to hear Dr. Evans state that he gives rather large doses. I did not understand whether he gave this dose at one sitting or distributed it over a period of four or five days or a week. We have followed the plan of spreading it over a period of a week. We have had a considerable number of recurrences, and rather than seeing the patient only after six months, we insist on seeing him also at nine and twelve months and a year and a half and two years.

DR. WILLIAM A. EVANS, Detroit: The practical application of the information contained in this paper depends on the variation in the response of the tumors to irradiation and on the variable amount of irradiation needed in the proper treatment of the various types of thoracic tumors. For instance, lymphosarcoma apparently is controlled by one series of treatment, whereas those tumors that respond more slowly, as of the type found in Hodgkin's disease, require two series, and the more resistant types of tumors require several series for their proper control. At the present time we are using a water cooled tube, and the treatments are all administered within one week. In lymphosarcoma and Hodgkin's disease, all of the lymphatic groups are treated, so that some patients are treated through as many as eighteen or twenty portals. When repetition of the treatment is indicated, the second series is given about ten weeks after the first. Each group of glands receives approximately a 90 per cent. depth dose.

Filtrable Viruses.—The term "filtrable virus" implies that the common property of the ultramicroscopic organisms is filtrability through a candle already proved impervious to ordinary small microbes. When the vesicular fluid of a vesicle in foot-and-mouth disease is taken and largely diluted—for example, 0.2 c.c. with from 30 to 50 c.c. of saline solution—and the mixture is filtered through a candle, the infective agent passes through apparently without loss. This fact, discovered by Loeffler and Frosch twenty-seven years ago, was the first definite "filtrable" virus; it still influences the bacteriologist to such an extent that filtrability is regarded as the final test of an invisible virus. The contents of a herpetic vesicle may be diluted with saline solution, filtered, and the filtrate is infective, as is determined by its power to cause pathologic changes in the brain of the rabbit. If, however, infective brain tissue be taken from a rabbit ill with, or dead of, herpetic encephalitis, and the tissue be ground thoroughly with sand, diluted with saline solution, filtered through sand (or spun) to remove coarse particles, and then passed through a fine candle, the final filtrate is noninfective. Here we can only conclude that the virus has become so firmly attached to brain tissue that it is not possible to separate them by ordinary mechanical processes. Filtration, in other words, breaks down. Again, calf lymph which undoubtedly contains the virus of vaccinia may be filtered, but the filtrate does not contain the virus.—Gye, W. E.: *Brit. M. J.* **2**:189 (Aug. 1) 1925.

Clinical Notes, Suggestions and New Instruments

CARCINOMA IN AN ABERRANT THYROID AT BASE OF TONGUE

ASTLEY P. C. ASHHURST, M.D., AND C. Y. WHITE, M.D.,
PHILADELPHIA
Surgeon and Director of Laboratories, Respectively, Episcopal Hospital

Aberrant thyroid tissue in the tongue is unusual. Carcinoma occurring in such an aberrant thyroid is almost unknown. Bérard and Dunet[1] state that there is not yet on record a proved case of cancer of a lingual thyroid. The following is the history and pathologic report of such a case:

REPORT OF CASE

A. C., a man, aged 56, admitted to the Episcopal Hospital, Nov. 22, 1916, complained of a lump on the back of his tongue near the right lower molar teeth. This lump had been noticed for more than twenty years; first as a small hard mass that very gradually grew larger. After about five years, it began to give him pain. Thirteen years previous to his admission to the Episcopal Hospital (i. e., in 1903), this mass had been removed at the Methodist Hospital, Philadelphia, by Dr. Walter Roberts, who reported to us that it was thought to have arisen in the lingual tonsil, and that microscopic examination had shown it to be entirely benign. Unfortunately, neither the sections nor the detailed report of the examination had been preserved.

Fig. 1.—Nine days after excision (electric cautery) of tumor growing from right base of tongue (carcinoma of aberrant thyroid).

The patient stated that about three years after this operation, he noticed the glands beneath the jaw increasing in size, first on the right side of the neck, later on the left side; the growth on the tongue gradually returned. He then came to the hospital, on account of difficulty in eating and swallowing, and pain in the tongue.

The mass was about 8 cm. long in its anteroposterior diameter, on the right side of the tongue involving its posterior half; its posterior border, close to the epiglottis, was raised 2.5 cm. from the base of the tongue, but its anterior border was not so high. The tumor extended laterally as far as the alveolus, but not beyond the midline. It was slightly ulcerated on its surface, was almost of wooden consistency, and was continuous with a mass in the floor of the mouth. The latter mass felt cystic. The submaxillary salivary glands and lymph nodes on both sides of the neck were visibly enlarged (Fig. 1) and were firmly attached to the deeper structures. The lower cervical lymph nodes were palpable, and they, as well as the epitrochlear, femoral, inguinal and iliac lymph nodes on both sides of the body, seemed larger than normal.

The tumor was evidently inoperable, with any hope of curing the patient, but his condition grew steadily worse while in the ward; on some days it was impossible for him to swallow. He had an evening rise of temperature to 100 F., and his white blood cells numbered from 15,000 to 19,000 on

1. Bérard and Dunet: Cancer of the Thyroid, Paris, 1924, p. 454.

several occasions. It was finally determined to burn off the part of the tumor projecting above the tongue.

Operation was undertaken, December 12, with a tentative diagnosis of lymphoma of the lingual tonsil. Under intratracheal ether anesthesia, the lump was burned off the tongue by the electric cautery knife. Its base was almost of carti-

Fig. 2.—Lingual thyroid, showing carcinoma in other areas.

laginous hardness. No bleeding occurred. Nothing was done to the mass in the floor of the mouth or to the submaxillary masses.

The patient improved rapidly after operation. His fever disappeared; he was free from pain and was able to swallow easily. The masses in his neck grew much smaller, and in less than two weeks they had contracted so much that wrinkles began to appear in the skin of the neck. He was

Fig. 3.—Carcinoma in lingual thyroid.

kept under observation for several months, and continued to do well. Eventually, efforts to find him were ineffectual, and though no record of his death can be found in the vital statistics of the city of Philadelphia, it is not probable that he is still living.

The pathologic report showed that the sections of the tumor from the tongue contained lobulated areas of typical thyroid tissue (Fig. 2), which in places almost bordered the epithelial surface of the tumor. There was a very small amount of connective tissue framework in the thyroid areas, yet more than in the normal thyroid. At one point in the section the epithelial covering was deficient, probably from ulceration.

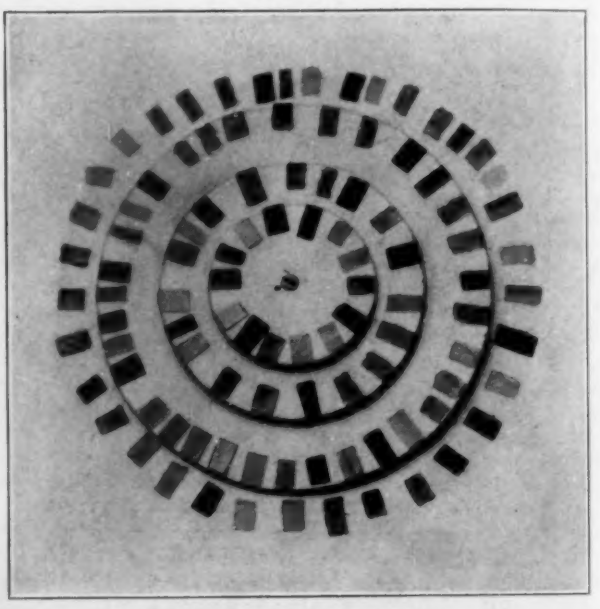
In certain areas of the section, running from typical lobules of thyroid tissue, were dense accumulations of epithelial cells, placed in bands or cords; and in still other areas there was a tendency to alveolar arrangement, that is, an arrangement typical of adenocarcinoma (Fig. 3). In other parts this carcinomatous arrangement was marked by increase of fibrous tissue, separating the epithelial cells into distinct cancer nests, with somewhat the appearance of scirrhous carcinoma. The carcinomatous areas bordered directly the epithelial covering of the tumor, causing thinning of the layers at certain points. The diagnosis was adenocarcinoma of the lingual thyroid.

257 South Sixteenth Street—Episcopal Hospital.

A NEW DEVICE FOR TESTING THE COLOR SENSE

WALTER G. NELSON, M.D., BOSTON

For the last five years, part of my duties has been the examination of the color sense of applicants for various government services. Williams' lantern and the color skeins



Color wheel for testing color sense.

have both been employed and are still used. However, I have felt that the color skeins have certain disadvantages; among them, the length of time involved in giving the test, the fact that the loose skeins are apt to be misplaced or lost and also the fact that they are apt to become soiled, thus further confusing the applicant.

About two and a half years ago, I devised a scheme that I think has all the advantages of the color skein system without most of the disadvantages. I have termed the test the "color wheel test," because of its construction. The device has compactness, being 15 inches square and about 2 inches high at its highest point. It also has permanency, for it is constructed of strong, though thin, wood. Metal could be used as well.

On the base are arranged three wheels, one above the other, decreasing in size. On the base and on each wheel are arranged small rectangles of colors in both primary and intermediate shades.

The base and wheels are covered with white enamel, which permits of washing when soiled. The colors are also of washable paint and can be cleansed at will, with a damp cloth.

With this arrangement any given color can be matched simply by turning the wheels; when an applicant performs the task correctly, there will be four colored rectangles in a row, all of the same color, but possibly of lighter or darker shades. If the test is not performed correctly, there will be a confusion of colors.

The person being tested can be required to enumerate each color in order, to name certain colors picked by the examiner, or to pick out all the shades of a given color. The color wheel can also be used to instruct applicants in colors, if they are merely color ignorant and not color blind.

It has been found from frequent examinations, in conjunction with the other tests, that color blindness can be successfully detected by this device. The applicant can see at a glance all the colors, and a great amount of time thus can be saved. The device is compact, and the colors cannot be lost.

If desired, small colored silk or wool skeins can be substituted for the paint colors.

Custom House.

SPONTANEOUS SUBCUTANEOUS RUPTURE OF THE TRACHEA

J. W. NIXON, M.D., SAN ANTONIO, TEXAS

No mention is made of spontaneous subcutaneous rupture of the trachea in any of the standard textbooks on surgery, and a study of the literature discloses the infrequency of the condition. Therefore, this case seems to be of sufficient interest to warrant reporting.

M. H., a negress, aged 27, married, while waiting on the table, suddenly experienced a sharp pain in the region of the trachea. She immediately noticed difficulty in breathing, which rapidly grew worse. At the same time, her throat began increasing in size, growing larger with each breath. She was taken to the Robert B. Green Memorial Hospital, where I saw her thirty minutes after the onset of her trouble. On first sight, she appeared to have a large goiter occupying the entire space from the tip of the chin to the manubrium sterni. However, on examination, the tumor was soft and emphysematous, and felt very much like an air cushion. This mass became larger during expiration and smaller during inspiration. At this stage, the patient was breathing with

Fig. 1.—First rupture (*A*) and site of operation (*B*).

much more difficulty and seemed to be in great distress. The difficulty of breathing was relieved considerably a few minutes later when the skin, which had become extremely tense, ruptured at a point posterior to the angle of the right jaw, anterior to the sternomastoid muscle. A second rupture occurred on the under surface of the arm 2 inches from the axilla, and still another, the third, appeared within five minutes' time at the lower posterior border of the axillary space. At this time, the patient was literally breathing through these three openings in the skin.

An operation was performed, Feb. 19, 1925, under ether anesthesia. With the idea of locating the site of the rupture, Dr. A. F. Clark was asked to make a bronchoscopic examination. This was done, but because of the hemorrhage in

Fig. 2.—Second (*A*) and third (*B*) ruptures.

the trachea, it was impossible to locate the rupture by this method. An incision was then made, exposing the entire cervical portion of the trachea. This part of the trachea was found intact. A bloody froth was seen to be coming up from beneath the sternum, indicating a rupture within the thoracic cavity. Because of the patient's condition, a further exploration was not deemed advisable and a low tracheotomy was performed.

During the week following the operation, the patient had an elevation of temperature above normal, the highest being 102 F. The emphysematous condition, which had extended over the neck, right arm, the entire chest and the right axilla, had entirely disappeared at the end of fourteen days. However, a troublesome cough lasted for two months. A blood Wassermann test, taken before her departure from the hospital, was negative.

Zeuch, in 1922, made an exhaustive study of the literature, and tabulated all the cases of subcutaneous rupture of the trachea which had been reported up to that time. Only fifty-three cases could be found. It is interesting to know that of all the fifty-three cases mentioned by Zeuch, in every case with the exception of three the rupture was caused by a blow or a violent strain on the trachea. These three cases, together with my own, make a total of four cases occurring spontaneously. This patient had had a cough a few days prior to the rupture, but at the time it occurred, she was not coughing.

The chief point of interest in connection with this case is the need of immediate treatment and the method of so doing. As soon as the diagnosis is certain, an incision should be made through the skin in the midline over the trachea. This should be done without waiting for an anesthetic. Zeuch calls attention to the importance of this procedure, and in my own case the immediate relief the patient obtained following the rupture of the skin in the three places mentioned clearly demonstrates the value of early relief from the pressure caused by the escape of air into the subcutaneous tissues.

331 Moore Building.

AN IMPROVED APPLICATION OF THE USE OF RENAL FLUOROSCOPY AT THE OPERATING TABLE

B. H. HAGER, M.D., MADISON, WIS.
Urologist, State of Wisconsin General Hospital

The application of fluoroscopy at the operating table is now conceded to be an essential prerequisite to successful surgery for renal lithiasis.

Fig. 1.—Head operating fluoroscope in use.

Braasch, in 1919, was the first to stress this principle, which has since been modified by various surgeons to meet their particular needs. By preference, some continue to use the roentgen-ray film rather than the fluoroscope. Without considering the virtues and advantages of either method, the suggestion presented here offers an advantage over fluoroscopy, which entails the presence of a radiologist. The roentgen-ray apparatus in use is a modern bedside unit with a 10 ma. Coolidge radiator tube, using a 5 ma. current.

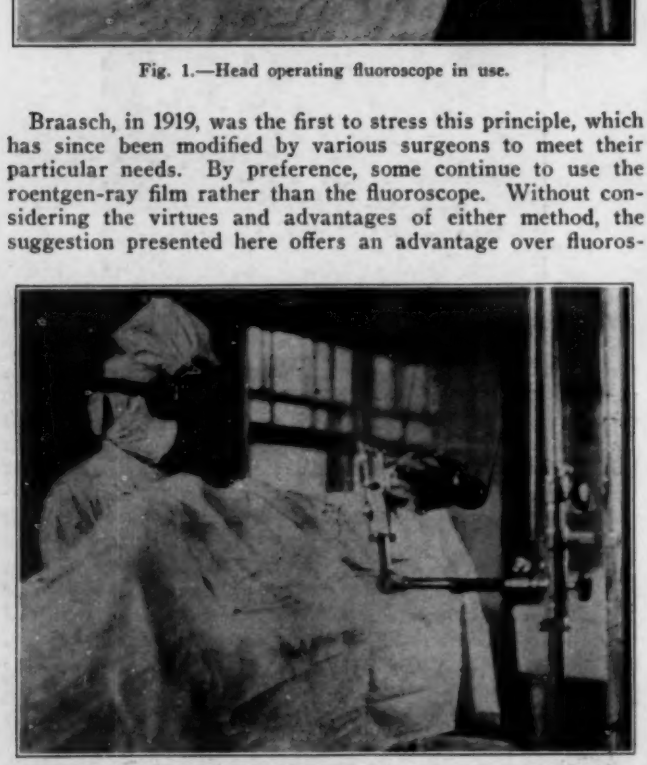


Fig. 2.—The nose of the hood of the fluoroscope can be folded back, if accommodation is slow.

The accompanying illustrations show the principles of its application. As soon as renal exposure has been obtained, a nurse slips the Patterson head operating fluoroscope over the surgeon's head, a sterile cover having been slipped over the nose of the fluoroscope. The time required for accommodation is surprisingly short, much less than is usually anticipated. In persons in whom accommodation is slow, the nose of the hood can be folded back, as shown. A colored glass protects the eyes from daylight and allows sufficient light for the surgeon to carry on his work. As soon as accommodation occurs, the hood can be extended and the fluoroscopic search for stone begun. The method is simple, and does not interfere with surgical asepsis; it allows the surgeon to localize the stone in the kidney with his fingers, and to regulate the roentgen-ray current with the foot switch.

A NEW OBSTETRIC VAGINAL SPECULUM

C. O. McCORMICK, M.D., INDIANAPOLIS
Associate, Obstetrical Department, Indiana University School of Medicine

In making immediate postdelivery examinations and repair work, I have for the last two years used a vaginal speculum, designed by myself, which I have found to possess a practical value that warrants its recommendation.

All vaginal specula and retractors that had previously come into my hand were, with one exception, designed and constructed for gynecologic use. It occurred to me that there should be a marked distinction in the design of gynecologic and obstetric specula. At a postdelivery examination, the speculum or retractor should be an instrument that will permit spacious exposure and at the same time be as nontraumatizing as possible, because one is dealing with tissues that have already undergone a large degree of traumatization.

With these two points in mind, I had the instrument made that is shown in Figure 1. It might be spoken of as a modified ribbon retractor, the short, or retractor arm, being thin, wide and flexible (Fig. 2). The length of the short arm is 10.5 cm. and its width, 3.7 cm. The length of the long arm, or handle, is 23.5 cm. The rounded, thickened end of the short arm and the turned edges and flexibility reduce tissue injury to a minimum. These protective features and ease of cleanliness are not afforded by the only other obstetric speculum with which I am familiar; namely, that of De Lee.

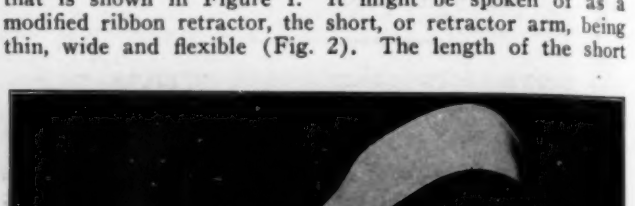


Fig. 1.—Obstetric vaginal speculum.

To be used to the best advantage one should, of course, employ two of the specula, thus obtaining counterretraction. I have thus found them to be an excellent aid in exploring or repairing the cervix, and in repairing vaginal lacerations, regardless of how high, because they lend unusual exposure and make repair possible under direct vision. They are, likewise, applicable for perineal and episiotomy repair. If the episiotomy is mediolateral, or the vaginal laceration lateral, I have found it desirable to use the instrument on the side of the episiotomy or laceration with a retractor arm of 3 cm. width.

Fig. 2.—Short arm of obstetric vaginal speculum.

504 Medical Arts Building.

Special Article

REPORT OF COMMITTEE ON VISUAL STANDARDS FOR DRIVERS OF MOTOR VEHICLES *

Acting on the request of the section that the standards submitted last year be modified, your committee has carefully considered the criticisms and suggestions offered and desires to submit the following, hoping it may meet with the section's approval:

(*b*) The applicant has vision of at least 20/50 in one eye and vision of at least 20/100 in the other eye, with or without glasses. Applicants with less vision than 20/100 in the poorer eye may, under certain conditions, be qualified by a special or county board. (See below.)

(*c*) Double vision shall disqualify.

SPECIAL OR COUNTY BOARDS OF PHYSICAL LICENSURE

In each state there shall be a board of physical licensure in each county, or one for several counties, consisting of two general practitioners or surgeons, and one ophthalmologist, which shall meet at stated intervals and have final decision in all cases. These boards so constituted shall be empowered (1) to examine all persons applying to them for a physical license, (2) to pass on the fitness of candidates regarding whose qualifications any individual examiner may be in doubt, and (3) may, under certain conditions, qualify candidates who lack the visual requirements specified above; viz., applicants with a lower standard of vision than 20/100 in the poorer eye, may be qualified by them provided that the vision in the best eye is at least 20/30, without the aid of glasses, and the field of vision is normal, that hearing is normal in both ears, and that the applicant is fully capacitated in all other respects physically, and alert mentally. In such cases applicants with one eye partially or wholly blind, or even entirely absent, may be qualified. These boards shall be appointed by the governor and shall be recompensed either by a fee paid by the applicants who may appear before them, or they shall be salaried officers directly connected with the department in each state controlling the granting of motor licenses.

In the original report, the committee offered standards other than those concerned with visual acuity. This was done with the idea of establishing standards which in simplicity and effectiveness might correspond with those suggested for vision, the committee having in mind submitting this part of the report to the organizations within the American Medical Association more directly concerned than the Section on Ophthalmology.

In order to avoid delay, and to secure action on the standards other than those dealing with vision, your committee has sought the advice of Dr. William C. Woodward of the Bureau of Legal Medicine and Legislation of the American Medical Association, who suggested referring them for action to the Section on Preventive and Industrial Medicine and Public Health, of which Dr. Oscar Dowling is chairman. This was done, Dr. Dowling giving his personal approval to the recommendations made by your committee and referring them to his section for action. In the event such action be favorable and the revised report relating to visual standards herein presented be accepted by this section, your committee would suggest that the report in toto be submitted without further delay to the House of Delegates with the request from this section that the Association take such measures as may be within its power, to urge and aid in the establishment of these physical standards in every commonwealth, territory and possession of our country.

Respectfully submitted.

CONRAD BERENS.
WILLIAM C. FINNOFF.
HARRY S. GRADLE.
WILLIAM CAMPBELL POSEY, Chairman.

* Read before the Section on Ophthalmology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

DIPHTHERIA IMMUNITY TEST (SCHICK TEST) (See New and Nonofficial Remedies, 1925, p. 369).

The Gilliland Laboratories, Inc., Marietta, Pa.

Schick Test (See New and Nonofficial Remedies, 1925, p. 370).—Marketed in packages containing one vial of diphtheria toxin (standardized) and one 10 Cc. vial of physiological solution of sodium chloride for dilution, the amount being sufficient for fifty tests. Two-tenths (0.2) cubic centimeter of the dilution is injected intradermally, which represents 1/50 minimum lethal dose for a guinea-pig of 250 gram weight. As a means of control, the Schick test control, representing diphtheria toxin of the same lot heated sufficiently to destroy the specific exotoxins, is supplied.

CORPORA LUTEA, DESICCATED-P. D. & CO.—The dried corpus luteum of cattle and swine.

Actions and Uses.—See general article, Ovary, New and Nonofficial Remedies, 1925, p. 251.

Dosage.—From 0.24 Gm. to 0.6 Gm. (4 to 10 grains) daily.

Manufactured by Parke, Davis & Co., Detroit. No U. S. patent or trademark.

Capsules Corpora Lutea, Desiccated-P. D. & Co., 2 grains.
Capsules Corpora Lutea, Desiccated-P. D. & Co., 5 grains.
Tablets Corpora Lutea, Desiccated-P. D. & Co., 2 grains.
Tablets Corpora Lutea, Desiccated-P. D. & Co., 5 grains.

The corpora lutea of swine and cattle are ground to a fine pulp and dehydrated in vacuo at a temperature not exceeding 60 C., powdered and diluted with sugar so that one grain of the dry powder represents approximately 5 grains of the fresh gland substance.

Corpora lutea, desiccated-P. D. & Co. is a yellowish or brownish colored powder having a peculiar odor; partially soluble in water.

STREPTOCOCCUS VACCINE (See New and Nonofficial Remedies, 1925, p. 359).

Eli Lilly & Co., Indianapolis.

Streptococcus Vaccine.—A suspension of killed *Streptococcus pyogenes* in physiological solution of sodium chloride, preserved with 0.3 per cent. of cresol. Marketed in single 5 Cc. vial packages containing 500 million killed bacteria per cubic centimeter and in single 20 Cc. vial packages containing 500 million killed bacteria per cubic centimeter.

STAPHYLOCOCCUS VACCINE (See New and Nonofficial Remedies, 1925, p. 357).

Eli Lilly & Co., Indianapolis.

Staphylococcus Vaccine.—A suspension of killed *Staphylococcus albus* and killed *Staphylococcus aureus* in equal proportions, in physiological solution of sodium chloride, preserved with 0.3 per cent. of cresol. Marketed in single 5 Cc. vial packages containing 4,000 million killed bacteria per cubic centimeter and in single 20 Cc. vial packages containing 4,000 million killed bacteria per cubic centimeter.

Staphylococcus Aureus Vaccine.—A suspension of killed *Staphylococcus pyogenes aureus* in physiological solution of sodium chloride, preserved with 0.3 per cent. of cresol. Marketed in single 5 Cc. vial packages containing 2,000 million killed bacteria per cubic centimeter and in single 20 Cc. vial packages containing 2,000 million killed bacteria per cubic centimeter.

ANTISTREPTOCOCCUS SERUM (See New and Nonofficial Remedies, 1925, p. 339).

Eli Lilly & Co., Indianapolis.

Antistreptococcic Serum.—A polyvalent serum obtained by immunizing horses with intravenous injections of gradually increasing doses of living streptococci. Marketed in packages of one syringe containing 10 Cc.; in packages of one syringe containing 20 Cc.; in packages of one vial containing 10 Cc., and in packages of one double ended vial containing 50 Cc. with apparatus for intravenous injection.

TETANUS ANTITOXIN, CONCENTRATED (See New and Nonofficial Remedies, 1925, p. 332).

Lederle Antitoxin Laboratories, New York.

Concentrated Tetanus Antitoxin (Globulin) (See New and Nonofficial Remedies, 1925, p. 332).—Also marketed in packages of one cylinder containing 10,000 units with gravity injecting outfit for intraspinal use.

PNEUMOCOCCUS VACCINE (See New and Nonofficial Remedies, 1925, p. 355).

Eli Lilly & Co., Indianapolis.

Pneumococcus Vaccine, Prophylactic.—A suspension of killed pneumococci Types I, II and III in physiological solution of sodium chloride, preserved with 0.3 per cent. of cresol. Marketed in single 5 Cc. vial packages containing 5,000 million killed bacteria per cubic centimeter.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 17, 1925

STATISTICAL STUDIES IN CANCER

Whether cancer mortality is actually increasing, or whether the increase is only apparent and is due merely to more frequent diagnosis of the disease, are matters of constant argumentation. The influence of heredity is likewise debated. Doubtless the answers lie in statistical studies expertly pursued. The publication of the article by Schereschewsky in this issue of THE JOURNAL causes us to take account again of our knowledge in this field. In 1923, William T. Howard[1] tried to answer two questions: Is cancer actually increasing? Is it really curable? He confined himself to material found in Baltimore, where cancer mortality has been reported with fair consistency since 1813. Correcting for the increase in recorded death rates, the influence of sex, race and age, and the effect of improvement in diagnosis and statistical classification, he concluded, first, that neither the incidence nor the mortality of cancer is increasing among those exposed to risk; secondly, that, from 1880 to 1920, mortality from cancer of the breast and uterus, which can be more accurately computed than that of other organs, not only failed to increase, but, in the last half of the period, declined. This decline he attributed to medical activities; that is, to cures.

Cancer was only incidental to Raymond Pearl's[2] analysis of the situation in 1924. His intricate study, however, arrived at two conclusions that are relevant here. The first of these states that the occurrence of cancer in any individual is but slight evidence of any inherited, constitutional weakness in him. Pearl,[3] furthermore, borrowing from Dublin and Baker, gave definition to the influence of foreign stocks on cancer rates.[4] The Italians, he said, compose practically the only foreign race group whose cancer mortality is lower than that of the native born group. Of the northern European stocks, cancer incidence is high among the British and Germans, and highest among the Irish. In addition, he showed that general mortality rates, of which cancer is an element, were relatively low among Austro-Hungarians and Russians. These findings are significant in view of the fact that the volume of our immigration has decreased among northern Europeans and increased among Italians and Slavs.

Pearl and Schereschewsky in some part cover similar fields, and one confirms the other. Schereschewsky points out that the more numerous immigration of Italians and Slavs, in whom cancer incidence is lower than it was in the earlier immigrant types, had, if anything, an effect to lessen rather than to increase the cancer death rate in this country. But Howard and Schereschewsky do not agree. To be sure, Howard claimed for his work nothing more than could be inferred from statistics obtainable in Baltimore. Schereschewsky, on the other hand, included in his study the ten original registration states, and his most significant conclusion is that, with corrections made, cancer mortality is actually from 25 to 30 per cent. higher than it was twenty-one years ago.

The question no doubt arises, Have we gained anything by these studies? Each investigator is eminent in the field, and yet two of them seem to disagree on that which we wish most to know; namely, whether or not cancer is on the increase. The apparent disagreement, however, is indicative of the value of careful analysis of great, and ever greater, masses of material. The reader of any statistical results must be careful to infer from them no more than the investigator himself infers.

1. Howard, W. T.: The Course of Mortality from Cancer in Baltimore, J. A. M. A. **80**: 71 (Jan. 13) 1923.
2. Pearl, Raymond: Studies in Human Biology, Baltimore, Williams and Wilkins Company, 1924.
3. Pearl: Studies in Human Biology, p. 371.
4. Pearl: Studies in Human Biology, pp. 222, 223.

SLEEP

For the healthy, sleep is a hygienic necessity to well being; for the sick, it often is a requisite in the restoration of health. The suspension of consciousness, one of the features of sleep, may be brought about artificially through the action of certain drugs that intoxicate or inhibit the cerebral functions, or through the production of cerebral anemia. Anesthesia and fainting, respectively, illustrate these phenomena; consequently the question has been raised as to whether sleep in any degree partakes of such features.

Certain observations in connection with sleep have repeatedly been verified. The pulse rate decreases; the blood pressure usually falls somewhat, and there are significant changes in the distribution of blood in the body. Studies of persons in sleep seem to indicate that the minimum arterial pressure is only gradually reached; that is, rarely before the third or fourth hour. As the early period of sleep is usually that of deepest stupefaction, it becomes unlikely that the lowering of blood pressure is closely connected with

the loss of consciousness. Blankenhorn and Campbell [1] of the Lakeside Hospital, Cleveland, for example, have lately made careful records on many persons showing the occurrence of the minimum systolic point (101 mm.) at the fourth hour of sleep, a slight rise before waking, and an abrupt rise after waking to a point equal to the first hour of sleep. The diastolic pressure shows a like though lesser fall. In these persons during sleep the pulse rate showed a decrease parallel in its time relations to the changes in pressure. Consequently they argue that the fall of pressure is due mainly to the fall of pulse rate, though it is probably somewhat influenced by the peripheral relaxation. Landis,[2] who has made similar measurements with comparable or even lower findings, at the University of Minnesota, has reached the conclusion, often suggested before this, that the circulatory changes are resultant from sleep rather than causative of it. He argues that if the drop in pressure were causative, then reclining, being a position favorable for loss of tone, should lead to a more pronounced pressure drop than that of the semierect position, being more conducive to sleep. However, in his experiments on man the pressure and pressure curves were practically the same in either position, while the going-to-sleep process was no more difficult in one position than in the other. This offers further evidence to Landis' belief that the sleep process is one of removal of superimposed neural control and a return to a more primitive automaticity of function.

MacWilliam [3] has presented some heretofore unappreciated aspects of the subject by emphasizing a difference between sound sleep, such as is familiarly attended with the characteristic lowering of blood pressure, and disturbed sleep and dreaming, which may be accompanied by remarkable elevations of arterial tension. In his observations, these changes were induced in the same persons by moderate exertions. In view of the rapid development of such changes in sleep, especially in dreams of motor effort and in nightmares, MacWilliam thinks it is evident that a formidable strain—harmless in the young and healthy person—may thus be thrown on the weak points of the circulatory system, whether these are cardiac with susceptibility to anginal attacks or to ventricular fibrillation and sudden death, or arterial with risk of hemorrhages, cerebral (especially in the recumbent posture), gastro-intestinal or pulmonary. If MacWilliam is correct, the conception of sleep as a period of quiescence and recuperation has thus to be qualified by the contingency of disturbed sleep with active calls on the nervous system, the heart and the blood vessels. The mechanism of the rise of pressure in disturbed sleep differs in some respects from that present in ordinary muscular exertion, since in the former the pumping action of working muscles, greatly augmenting the venous return to the heart, is absent. In other words, what is true of many factors in life seems also to apply to sleep: most sleeps are good, but some may be far better than others.

1. Blankenhorn, M. A., and Campbell, H. E.: The Effect of Sleep on Blood Pressure, Am. J. Physiol. **74**: 115 (Sept.) 1925.
2. Landis, C.: Changes in Blood Pressure During Sleep as Determined by the Erlanger Method, Am. J. Physiol. **73**: 551 (Aug.) 1925.
3. MacWilliam, J. A.: Blood Pressures in Man Under Normal and Pathological Conditions, Physiol. Rev. **5**: 303 (July) 1925.

IS ACRODYNIA A NEW DISEASE?

Publicity is a potent factor for good in more than one walk of life. Even in such seemingly remote byways as clinical diagnosis and therapy, the heralding of unsuspected facts relating to disease may bring unanticipated benefits. Thus it sometimes happens that accurate description of supposedly rare human abnormalities serves to stimulate the memory of the less critical practitioner and help him recognize the real significance of pathologic entities that he may often have encountered without appreciation of their possible import. The record of a disease syndrome supposed to be novel sometimes elicits evidence that it has long been familiar to physicians who have not suspected its possible larger meaning. This seems to be true of acrodynia, a train of symptoms affecting infants and young children and described with considerable precision a few years ago by Byfield.[1] The clinical features of the disorder are manifold. There are general symptoms, such as anorexia, loss of weight and weakness. Nervous manifestations include hyperirritability, sleeplessness, paresthesia and photophobia. Dermatologic symptoms are especially conspicuous in such forms as hyperhidrosis, miliaria, desquamation, erythema and alopecia. The term acrodynia, referring to the painful extremities, describes one of the most typical symptoms of the complex, although it gives no indications of nutritional or neurologic involvements in the etiology.

That the disease here referred to is by no means uncommon is indicated by the rapid succession of case reports that followed the early exposition of the subject five years ago. Analogous, if not identical, maladies had been encountered far and wide in pediatric practice. Australia furnished a liberal number of typical cases. The writers in England also presented a quota of them. In fact, it now appears that what was regarded in 1920 as a new disease is a long recognized clinical entity classified under various names. These include the expressions "pink disease," "rawbeef feet and hands," "erythredema," and "dermatopolyneuritis," as well as the name acrodynia, which Weston [2] introduced to differentiate the disorder from pellagra, which it resembles in several respects.

Despite this multiplicity of designations, there remains a fairly definite clinical picture, which is begin-

1. Byfield, A. H.: A Polyneuritic Syndrome Resembling Pellagra-Acrodynia (?) Seen in Very Young Children, Am. J. Dis. Child. **20**: 347 (Nov.) 1920.
2. Weston, W.: Acrodynia, Arch. Pediat. **37**: 513 (Sept.) 1920.

ning to be recognized by physicians who deal with childhood. Its etiology is not yet clear. Rodda[3] reminds us that because of its surmised resemblance to pellagra and the announcement of the "new" disease at the time when physicians were much concerned with vitamins, it is not strange that this was thought to be a deficiency disease. Rodda's own studies at Minneapolis indicate that acrodynia is usually preceded or accompanied by an upper respiratory infection. He therefore looks on it as the result of focal infection, predominantly in the tonsils and the adenoids. In his own experience, early recognition of the disorder and prompt removal of the tonsils has been followed by speedy and complete recovery in all of the youthful patients. In any event, mere dietetic and palliative treatment does not seem sufficient to avert the dangers of acrodynia. At a time when the therapeutic outlook for it has not been propitious,[4] any reasonable suggestion of rational treatment deserves a respectful hearing. Successful treatment should soon follow in the wake of the better understanding of the symptomatology. Probably, as Rodda suggests, before the advent of the roentgen ray and the Wassermann and tuberculin tests, acrodynia was at times confused with tuberculosis and syphilis, or with malnutrition of undetermined origin. The occasion for this has now passed.

PREOPERATIVE DIGITALIZATION

Tradition undoubtedly contributes much of practical benefit to medicine, for it often embodies the accumulated experience of many physicians in matters that have not been subject to strict experimental test. Thus, the undoubted virtues of fresh air and sunlight in certain conditions have a traditional history of many years, whereas the explanations of the favorable reactions which they represent are only now beginning to find expression in scientific literature. There is another type of tradition, however, represented by the blind acceptance of statements supposedly inspired by some "authority." These tend to be handed down as guides to practice, often regardless of common sense or rigorous logic, and sometimes in the face of conflict with demonstrable phenomena. These traditions may represent all shades of conviction, from fixed beliefs to wavering impressions. Because he has been told so, the convert may feel certain that night air causes malaria and may even suspect that the eating of fish is responsible for the genesis of carcinoma. It is this type of traditions that needs to be subjected to critical evaluation and clearly discussed in the light of demonstrable facts.

The dangers of "circulatory failure" and other less formidable postoperative complications are eventualities of practice that deeply concern the surgeon. Among the beliefs that are at present entertained with respect to the possibility of averting or at least minimizing such dangers is the widely claimed efficacy of digitalis in surgical patients. One may read of the advantage of preoperative digitalization in "tiding over" the periods of postoperative depression, or of averting the incidence of pneumonia after surgical intervention. A student of these varied views has remarked that most writers who recommend the frequent or routine practice of preoperative digitalization attribute its beneficial effects to the action on the blood pressure; more specifically, to its influence in maintaining pulse pressure. These are features, however, that are at present susceptible of accurate determination that ought to supplant mere conjecture with reputable facts. The problem at issue is, indeed, one of large moment in everyday clinical routine.

Notable progress in determining the facts with regard to the effects of preoperative digitalization has been made by a group of investigators[1] at the Yale University School of Medicine. The method consisted of determining the blood pressure and taking electrocardiograms at frequent intervals throughout operation, and observing any factors in the administration of the anesthetic or the surgical procedure that might be responsible for changes. Subsequently, also, the same sort of data were accumulated during the postoperative period. The observers concluded that measurements of blood pressure after operation are of no value in estimating the likelihood of complications or the rapidity of convalescence. Changes in arterial pressure in either direction seemed to be without clinical significance except when there was extreme lowering of the systolic and pulse pressures in cases of shock; in them, frequent observation of the blood pressure seemed essential. Electrocardiograms taken during operation frequently showed premature beats, paroxysmal tachycardia and disturbances of the pacemaker. These were not associated with demonstrable changes in the circulation and were regarded as without clinical significance.

A comparison of the observations on digitalized and nondigitalized patients disclosed only a few differences. There was a postoperative fall in systolic and pulse pressures in a greater proportion of the digitalized persons. Thus there was some evidence that the drug tends to cause precisely the change in blood pressure that it is usually given to avert. In any event, no evidence was secured of a beneficial effect of digitalis on postoperative complications or deaths. Many further records are essential before a final verdict can be rendered regarding the possible prophylactic value of the earlier administration of digitalis to surgical

3. Rodda, F. C.: Acrodynia: A Clinical Study of Seventeen Cases, Am. J. Dis. Child. **30**: 224 (Aug.) 1925.
4. Bilderbach, J. B.: Acrodynia, J. A. M. A. **84**: 495 (Feb. 14) 1925.

1. Marvin, H. M., and Pastor, R. B.: The Electrocardiogram and Blood Pressure During Surgical Operation and Convalescence: Observations on Thirty Patients, Arch. Int. Med. **35**: 768 (June) 1925. Marvin, H. M.; Pastor, R. B., and Carmichael, Mabel: Effect of Routine Preoperative Digitalization, ibid., p. 782.

patients. The behavior of older persons, in particular, has not been thoroughly studied. But the available evidence from the Yale records gives no support to the necessity or justification for routine employment of digitalis preoperatively in patients who possess normal hearts.

Current Comment

NEW HOME FOR NEW YORK ACADEMY

October 30, the New York Academy of Medicine will hold ceremonies in connection with laying the corner stone of its new building. The academy was founded in 1843 to promote the science and art of medicine, maintain a public medical library and promote public health. Its meetings have been open to all physicians and medical students; its public medical library is the only one in New York, and the Committee on Public Health, Hospitals and Budget has been active. Thus, the academy has served well its original triplicate purpose. In 1924, as the result of conferences held to discuss ways and means of expanding the activities of the academy, the Carnegie Corporation pledged a larger building and the Rockefeller Foundation an endowment. These gifts aggregate nearly three million dollars. Such support makes possible six acquisitions: a full-time director, an executive librarian, a new library service, a bureau of clinical information, a committee on medical education, and a monthly bulletin. Of these, the bureau of clinical information publishes a daily list of operations in New York City; the Committee on Medical Education oversees local postgraduate courses and internships and gives information both to American physicians who intend studying abroad and to foreign physicians who wish to study in America. The academy has provided that none of its activities shall overlap those of the American Medical Association, the Association of American Medical Colleges, or the councils on education and on pharmacy of the American Medical Association. Here cooperation between great institutions has resulted in widening the field of usefulness to the public of the New York Academy and of the physicians of the metropolis.

"WHO'S WHO IN AMERICAN MEDICINE"

Nearly a year ago physicians were circularized by the concern "Who's Who Publications, Inc.," "M. L. Lewis, president." The letter was to the effect that a publication known as "Who's Who of American Physicians and Surgeons" was to be issued, and it was to contain brief biographical records of those physicians and surgeons of America "who had rendered marked service to their fellow men." The editor of the book was given as Winfield Scott Downs. Physicians were asked to furnish biographical data, and any suspicion as to the bona fides of the publication was allayed by the statement: "Paid material is not accepted for this publication. Hence in supplying us with your biographical material you are under no financial obligation. . . ." Undoubtedly many physicians sent in biographical data in the belief that the book was to be what was claimed, and not a few readers of THE JOURNAL wrote asking whether the proposed publication was one in which confidence might be placed. They were told that the proposed book seemed to be a routine publication venture. This implied endorsement THE JOURNAL now wishes to withdraw. The latest letter sent out by Who's Who Publications, Inc., brings out the fact that the name of the proposed book has been changed to "Who's Who in American Medicine." The letter also carries with it a subscription blank and states the condition under which a physician's biography will appear, thus: "Your biography has been selected to appear in the work, the only obligation being the acceptance of one copy of the publication, payable on delivery." From this it would appear that "Who's Who in American Medicine," instead of being a biographical list of physicians and surgeons "who have rendered marked service to their fellow men," will be a list of those physicians and surgeons who are willing to pay "$10 per copy plus cost of delivery" for the book in which their biographies will appear.

ADOLESCENT GOITER IN NEW YORK

If we accept the recent dictum that simple goiter is one of the easiest of known diseases to treat, success will depend in some measure on the prompt recognition of the condition that demands a remedy. Thyroid enlargements make their appearance at various periods of life, notably in the fetus, in adolescence, during pregnancy and at the menopause. Simple goiter has been defined as "a compensatory hyperplasia of the thyroid gland, developing during the course of certain metabolic disturbances of unknown origin, but immediately dependent on a relative or on an absolute deficiency of iodin." It is on such a condition that administration of iodin has now abundantly been demonstrated to exercise both a prophylactic and a curative effect. Surveys made in many parts of the country since the classic report of Marine and his associates about eight years ago have indicated an unanticipated incidence of thyroid enlargement among schoolchildren in certain localities often spoken of as goiter belts. For the most part these have been in the interior of the continents at considerable distances from the coastal regions. Statistics indicating, as they have, a percentage incidence of adolescent goiter ranging from 30 to 80 cannot be contemplated with complacence. It is little wonder, therefore, that both the medical profession and the lay public have become aroused to the advisability of effective measures to avert an unnecessary defect of childhood. There no longer is debate about the need of therapeutic or prophylactic attention; discussion seems at present to be confined to a consideration of the agencies best adapted to undertake the work. A rivalry between the school physician, the public health officer and the family physician has attended the efforts in some

districts to promote child welfare. In respect to simple goiter, certain districts have regarded themselves as essentially immune because of their geographic location. This is true of the Atlantic seaboard. But a survey of more than 11,000 children in New York City by the Division of Educational Hygiene of the Department of Education [1] indicates an incidence of thyroid enlargement amounting to 20 per cent. among school girls of the metropolis. Such facts strongly suggest that the problem of goiter prophylaxis should not be overlooked in any place, however favorably it may appear to be situated. Large cities are centers of migration, which means environmental change for many of the population. It should also be realized that thyroid enlargement may start as a congenital defect or may begin at puberty or during pregnancy. It may not be enough to supply iodin to the adolescent. Perhaps the tendency to thyroid enlargement would be decreased if greater attention were paid to prophylaxis in expectant mothers. Information has accumulated to an extent that makes neglect inexcusable.

CARBOHYDRATE CONSERVATION IN THE BRAIN

Many years ago Huxley remarked that, in ultimate analysis, life has three legs to stand on: the heart, the lungs and the brain. In the active metabolism of the body, the lungs are concerned directly only in minor degree. Their indispensable rôle in respiration involves the functioning of a highly perfected diffusion membrane. The heart, on the other hand, is the seat of constant chemical reactions responsible for its contractile activity. What is involved thereby is indicated by a recent calculation that the maximal power of the heart is about equal to the amount of work involved in lifting the weight of the body one meter per minute.[2] Cerebral metabolism is not so conspicuous; in fact, it is only in very recent times that unmistakable quantitative evidence of chemical changes in the nervous tissue incident to activity have been accurately recorded. It has long been known that the heart is among the last of the organs to suffer depletion of its "reserves" when the body is under stress. In starvation, the cardiac muscle only slowly shows any noteworthy change in composition. The storage of carbohydrate long remains unimpaired. It is of obvious advantage that those organs which are most essential should be able to maintain their functions as long as possible when unfavorable conditions of nutrition develop. Like the heart, the brain also seems to conserve its carbohydrate reserve with great tenacity, according to experiments by Asher and Takahashi [3] at the University of Berne, Switzerland. Only under conditions that favor a state of exaggerated excitability of the central nervous system are the stored carbohydrates of the brain drawn on.

1. Goldberger, I. H., and Aldinger, A. K.: Goiter Incidence in School Girls of New York City, Am. J. Dis. Child. **29**: 780 (June) 1925.
2. Henderson, Yandell; and Haggard, H. W.: The Circulation and Its Measurement, Am. J. Physiol. **73**: 193 (June) 1925.
3. Takahashi, K.: Ueber experimentelle Kohlehydratverarmung und den Kohlehydratstoffwechsel des Gehirns, Biochem. Ztschr. **154**: 444, 1924; Asher, L., and Takahashi, K.: On the Experimental Production of Lack of Carbohydrates, and on the Carbohydrate Metabolism of the Central Nervous System, Proc. Soc. Exper. Biol. & Med. **22**: 238, 1925.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Malaria Control at Little Rock.—The malaria control division of the Little Rock Health Department cleaned 209½ miles of ditches last year and used about 16,000 gallons of oil in its malaria control work. Learning from Memphis that waste oil from oiling stations mixed with two parts of fuel oil could be used to prevent the propagation of mosquitos, 3,180 gallons were obtained from oiling stations free of charge. The malaria control area of 68 square miles, required the services of a superintendent, four inspectors, a truck driver, three ditchers and six oilers; the total cost of the work was $10,733.96. There was an increase last year in the number of cases and deaths from malaria, which the health commissioner considered probably due to frequent trips by residents into malarial districts without protection and to an increase in the number of malarial mosquitoes in the county outside the city.

CALIFORNIA

Fined for Advertising.—It is reported that Harry J. Morris, Los Angeles, was sentenced to pay a fine of $100 or serve sixty days in jail for violating the Medical Practice Act. The complaint that led to Morris' arrest was based on an advertisement in the Los Angeles Sunday *Times*. The sentence was suspended for sixty days provided Morris changes his advertising to comply with the law.

DISTRICT OF COLUMBIA

Grand Jury's Report on St. Elizabeth's Hospital.—The federal grand jury has filed in the supreme court of the District a report in which it suggests that Congress authorize the President to appoint a commission to investigate St. Elizabeth's Hospital, where 4,500 insane patients are confined. At the same time the grand jury returned an indictment charging William McIntire and Irwin R. Sweeny, attendants at the hospital, with manslaughter in connection with the death of William Green, a colored inmate, who died, July 17, 1924, due, it is said, to "a beating" he is alleged to have received. The grand jury expressed its belief that "there are many persons now confined there who are not now and never were insane, but who have been sent there for ulterior motives." The report complains further of overcrowding of patients, the "most deplorable conditions existing as a result; there are some rooms intended to accommodate twenty single beds containing more than forty beds, and there is scarcely room to walk between these beds. . . . If the overcrowded condition of the hospital is not remedied at an early date, we fear that the percentage of inmates becoming hopelessly insane will be greater than those cured, in spite of the best efforts of the superintendent and his assistants." The grand jury gave especial attention to conditions existing in Howard Hall, where the criminally insane are incarcerated and those who became insane while serving sentences in federal prisons. The report states that: "There is an open court in the center of the building about one hundred feet square called by the inmates the 'bull pen.' This is the only recreation space available and here the dangerous as well as the noisy patients mingle with those whose minds are almost normal. The sky is barely visible to the patients while they are in this court, and a glimpse of the outside world may be had by looking over the twenty-four foot wall." The grand jury's report generally approved the situation in other portions of the hospital.

The day following the presentation of the grand jury's report to the court, Secretary of Interior Hubert Work and Dr. William A. White, superintendent of the hospital, held a conference. Secretary Work vigorously denied the charge that any patients at the hospital are sane or are held there through "ulterior motives"; he stated that he was well aware that the hospital was overcrowded and that he has been making arrangements to ask Congress for appropriations to construct buildings to meet the overcrowded conditions. "I have found," said Dr. Work, "that in the artificial atmosphere

of the insane asylum many inmates appear sane, but if they are permitted to be at large again they soon establish the fact that they are insane. I have no doubt that one or more of the inmates impressed members of the grand jury, but you may be sure that if any of them were sane, Dr. White would only be too glad to release them." Secretary Work further called attention to the fact that there are sixty murderers confined in Howard Hall, and that the guards who had to maintain order among them had his sympathy. "It comes to a question of whether a guard must protect himself against these criminal patients or submit to injury. It is an extra-hazardous occupation." The present vogue of sending criminals to insane asylums instead of to prisons makes the care of an institution like St. Elizabeth's arduous.

ILLINOIS

Personal.—Dr. Elbert L. Damron, Effingham, has been appointed physician for the Pennsylvania Railroad to succeed the late Dr. James H. Walker.——Mr. W. D. Wrightson failed to be reappointed as public health officer of the Quincy public health district. The board ruled that the office should be held only by a physician. A new health officer has not yet been appointed.

Baby Conferences.—About 10,000 babies were examined physically and mentally at more than seventy baby conferences held at the various fairs this fall under the auspices of the state health department. The predominating defects found were nutritional—rickets, bowlegs, knock-knees, decayed teeth, enlarged heads, flabby muscles and undersize. Each baby was rated on the basis of an examination by specialists.

Health Officers' Meeting.—Dr. Isaac D. Rawlings, state health director, has called a meeting of all health officers in the state at the National Catholic Community House, East St. Louis, 1:30 p. m., October 20. Dr. W. A. Evans, Chicago, will preside, and among others on the program are Dr. William H. Parke, New York, Surgeons C. C. Pierce and Thomas Parran, Jr., U. S. Public Health Service, and Dr. Jacob C. Krafft, Chicago, president, Illinois State Medical Society.

Infantile Paralysis.—Twenty-two cases of infantile paralysis were reported to the state department of health the first week of October, which was about double the number of each of the two preceding weeks. In July, August and September 148 cases were reported against 117 for the same months of last year, while the total number of cases up to October 5 was 213 against 186 for the same period last year. Twenty-seven cases were reported from Cook County between September 1 and October 5; thirteen from Fulton County; eight from Henry; six from Livingston. The public schools at Cornell were closed when three cases developed in that community.

Chicago

Norwegian-American Hospital Holds Graduate Clinics.—The staff of the Norwegian-American Hospital has arranged a series of graduate clinics for the winter months, covering the various phases of medical sciences, giving members of its staff and physicians in the vicinity opportunity to secure advanced information. On Monday of each week, regional anatomy is considered by Dr. O. F. Kampmeier; on Tuesday, physical diagnosis by Dr. Maurice Lewison; on Wednesday, internal medicine by Dr. S. R. Slaymaker; on Thursday, a series of urologic clinics in which Drs. B. C. Corbus, V. J. O'Conor, R. B. Herbst and H. C. Rolnik alternate; Friday evenings are to be devoted to case presentations by members of the staff, and Saturday evenings to pathologic conferences and histories under the direction of Dr. W. G. Gibbs. The program is under the direction of Dr. Harry Noskin.

Society News.—Prof. Thomas V. Smith, Ph.D., department of philosophy, University of Chicago, and associate editor of the *International Journal of Ethics*, gave the address at the annual dinner of the Chicago Medical Society, October 14. Dr. Archibald H. Logan, Rochester, Minn., and Dr. Alexander A. Goldsmith will address the society, October 21, on "Idiopathic Ulcerated Colitis, with Special Reference to Etiology and Treatment," and "Amebic Dysentery," respectively.——Drs. Herman L. Kretschmer and Edwin W. Hirsch will address the Chicago Urological Society, Hotel Sherman, October 22, on "Carcinoma of the Prostate," and "Urethral Mucosa and Glands" (lantern slide demonstration), respectively.——The Chicago Council of Medical Women will meet, October 27, 8 p. m., at the Women's City Club.——The American Academy of Ophthalmology and Otolaryngology will hold a special scientific session, October 20, 8:45 p. m., at the Sherman House. The subject will be deafness and the meeting will be open to the public.——The Northwest Branch of the Chicago Medical Society will sponsor a health show at the Logan Square Masonic Temple, 2451 Kedzie Boulevard, December 3-5, which will be endorsed by the Illinois State Medical Society. The physical examinations to be given will include children and adults. Physicians are invited to offer their services as examiners. There will be a meeting of physicians, October 23, at the temple to explain the method of awards, the instruction being given by Dr. Jacob C. Krafft, president of the Illinois State Medical Society.——Among the speakers at the recent annual meeting of the Medical Society of the Missouri Valley, St. Joseph, Mo., were Drs. Robert H. Babcock, S. R. Slaymaker and Vincent J. O'Conor, who spoke on "Functional Disorders of the Heart," "Electrocardiograph Interpretations" and "Diseases of the Kidney," respectively.

INDIANA

Personal.—Dr. Larue D. Carter, Indianapolis, was elected president of a new organization of Indiana World War physicians at an organization meeting held during the annual convention of the state medical association at Marion; Dr. Arett C. Arnett, Lafayette, was elected secretary.

Survey of Bakeries.—The state board of health recently made a survey of 150 bakeries in every part of the state. From the standpoint of sanitation only one was found excellent, seventy-four good, sixty-seven fair, six poor and two bad. The survey was intended primarily to obtain information about the raw materials used in baking, and it was found that 137 bakeries used vegetable fat in place of lard, that the vanilla in almost every bakery was an imitation or a compound; that "lemon" and "cream" as applied to pies have no specific meaning, lemon pies being flavored with lemons and acidified with citric acid, and that "cream" pies sometimes contain no dairy products whatever. Forty-eight bakeries used jam and jellies for rolls, while seventy-eight used imitations or compounds; two-thirds of the bakeries used yellow coloring material and in some instances to simulate the coloring of eggs. With but few exceptions, however, these and other raw materials found were of the highest quality.

IOWA

Personal.—Dr. Harold E. Farnsworth has resigned as city health officer of Storm Lake, and Dr. Edgar F. Smith has been appointed to that position.

City Hospitals Merged.—An ordinance was recently passed by the city council of Des Moines providing for the consolidation of all buildings, properties and medical equipment now used by the city of Des Moines for hospital purposes with the Polk County Hospital.

Dr. Lambert Resigns.—Dr. John J. Lambert, for thirty years an instructor in anatomy, histology and embryology at the University of Iowa College of Medicine, Iowa City, has resigned, effective November 1, to become associated with his brother, Dr. Charles I. Lambert, in practice in New York.

LOUISIANA

Mosquito Conference.—Mayor Behrman, New Orleans, issued formal invitations to a conference, October 14, to the mayors of thirty cities in Louisiana, Mississippi and Alabama and to the presidents of police juries in fourteen parishes in Louisiana, to make plans for a comprehensive survey to determine the best methods of attacking the problem of marsh mosquitoes. Governor Fuqua issued invitations to the conference, it is reported, to the governors of adjoining states, the secretary of agriculture, the Surgeon General, U. S. Public Health Service, and other federal sanitation experts.

Quarantine Changed for Latin American Ships.—Heretofore ships from Latin American countries have been compelled, on account of quarantine, to delay, in some cases, a considerable time at quarantine, while ships from European countries, against which there are no quarantine restrictions, have been permitted to proceed directly to the sub-boarding station at Flood Street. It has been announced that after November 1 Latin American ships entering the port of New Orleans will also be permitted to proceed directly to Flood Street, the change having been authorized by the Surgeon General, U. S. Public Health Service.

MASSACHUSETTS

Harvard Appoints Tutor for Premedical Students.—Harvard University has appointed Dr. Hallowell Davis, Boston, as official tutor and instructor in the premedical sciences, whose duty it will be to aid premedical students properly to correlate their work and advise them in planning schedules which will lay the best foundation for a medical education.

New Health Unit.—The cornerstone for the $250,000 health unit to be erected at Paris and Emmons Streets, East Boston, from the George R. White Fund was laid, October 1. This will be the second health unit provided from the White Fund, the first one being in the north end of Boston. It will be of fireproof construction, with cafeteria and locker rooms in the basement, waiting rooms connected with dental, eye, preschool and prenatal clinics on the first floor, and an auditorium with stage, motion picture booths, and offices for welfare and nurses societies on the second.

Society News.—The Worcester District Medical Society held a joint meeting with the Worcester Ninth District Society at the Country Club, Worcester, September 9. Dr. Harold M. Frost spoke on periodic health examinations.——The four western districts, Berkshire, Franklin, Hampden and Hampshire, held a joint meeting at Belchertown, September 15; eighty fellows attended the dinner. Among the speaker were Dr. James S. Stone, Boston, president of the state society, Dr. John M. Birnie, of the board of registration in medicine, Dr. Theodore S. Bacon, a trustee of the Belchertown State School, and Dr. George E. McPherson, superintendent of the school.

MICHIGAN

Typhoid Outbreak Controlled.—The outbreak of typhoid fever at Alston, amounting to about twenty cases, has been investigated by the state board of health and found to be under control. Dr. Charles H. Benning, a representative of the state board from Lansing, went to Alston to supervise antityphoid vaccinations. A feature of the outbreak was, it is reported, that no ex-soldier who had been vaccinated during the World War against typhoid contracted the disease in this epidemic.

"Minimum Program" for County Societies.—To determine the problems of county medical societies and help them develop a constructive program, the state society has arranged a series of conferences of county officers and councilors, to be held by councilor districts. Seven conferences were held in September and three have been arranged for October. A "minimum program" for county society work has been carefully prepared and unanimously approved by the council. The *Journal of the Michigan State Medical Society* says that nowhere else in the United States has this plan been contemplated.

Wayne County Medical Society.—Dr. Charles L. Mix, Chicago, professor and head of the department of medicine, Loyola University School of Medicine, addressed the medical section of the Wayne County Medical Society, October 12, on "Toxic Goiter." Dr. Herbert M. Rich will address a general meeting of the society, October 19, on "Indications for Thoracic Surgery in Pulmonary Tuberculosis;" Dr. Max Ballin will discuss the surgical side of the subject. The Public Education Committee of the society requests that all members of the Wayne County Medical Society who care to give lectures to the public this year notify the chairman, Dr. James H. Dempster, promptly.

MINNESOTA

Personal.—The board of regents of the University of Minnesota has appointed Dr. Henry E. Michelson as director of the department of dermatology and syphilology at the university.——Dr. Ernest L. Strader, Louisville, Ky., has been appointed superintendent and medical director of the Deerwood Sanatorium, Brainerd, to succeed Dr. James K. Anderson, who resigned to take charge of Sunny Rest Sanatorium at Crookston. Dr. Strader for several years has been connected with the Waverly Hills Hospital, Louisville, and the Mineral Springs Sanatorium at Cannon Falls, both tuberculosis sanatoriums.

MISSISSIPPI

Society News.—Dr. Seale Harris, Birmingham, Ala., addressed the clinical meeting of the East Mississippi Eleven Counties Medical Society at Amory, September 15, on "Diet in Peptic Ulcers," and among others, Dr. John A. Rayburn, Ecru, spoke on "Should the General Practice of Medicine Be Considered a Specialty?" The president of the state association, Dr. Giles S. Bryan, Amory, invited all ex-presidents of the state association to this meeting, and those who responded included Drs. Robert S. Curry, Jackson; Lucien C. Feemster, Tupelo; Peter W. Rowland, Oxford; Jacob S. Ullman, Natchez, and Felix J. Underwood, Jackson, the last acting as toastmaster to the banquet in the evening.

MISSOURI

Arrested for Selling "Paregoric."—Eight druggists in St. Louis were arrested, October 2, by federal narcotic agents for selling more than 2 ounces of paregoric to a patron. They were held under bonds of $1,000 each.

Student Health Service.—St. Louis University initiated this fall a student health service which will provide a clinic where each new student may apply for treatment for any ailment at any time, and provide medical service in the home of any student at any time. The service is a division of the department of internal medicine of the university under the supervision of the director of that department and under the direction of a physician directly responsible for the service.

Personal.—Dr. Wallace S. Petty, Memphis, has been appointed full-time health officer of Pemiscot County at Caruthersville.——Dr. Theodore W. Romeiser, formerly professor of neurology at St. Louis University School of Medicine, St. Louis, has been appointed to the staff of State Hospital No. 2.——Dr. Levi H. Fuson has been elected president of the staff at St. Joseph Hospital, St. Joseph.——Dr. George L. Sherman has accepted a position at the sanatorium in St. Joseph which is conducted by Dr. Charles R. Woodson. ——Dr. James C. Chilton, Hannibal, has been appointed chief surgeon of the St. Louis and Hannibal Railroad.

Proposed County Health Department.—Dr. Joseph W. Mountin, Jefferson City, representing the state board of health, and others representing the county school boards, Red Cross and other organizations, appeared before the county court in St. Joseph, September 14, to advocate the establishment of a full-time county health unit in Buchanan County. Dr. Mountin said, it is reported, the unit would cost between $7,500 and $8,000, and that the state board of health would provide half that sum and that the Rockefeller Foundation and the U. S. Public Health Service would also assist. The unit as proposed would have a full-time health officer and two nurses, one maintained by the Red Cross. He said also that the county health department would carry on a program of public health education through the press, schools, moving pictures and conferences; instruction would be given in the rural districts to mothers, and health service would be established in the rural schools similar to that now in the city schools of St. Joseph, and that the sanitation of the dairies, schools and homes would be looked after.

NEW YORK

Society News.—Drs. Byron B. Bowen and Nelson G. Russell, both of Buffalo, addressed the Cattaraugus County Medical Society, Delevan, September 8, on "Present Day Problems of Diabetes" and "Treatment of Cardiac Disease," respectively.——Dr. Joseph H. Globus, adjunct neurologist to Mount Sinai Hospital, New York, addressed the Rockland County Medical Society, Letchworth Village, September 23, on "Diagnostic Features of Various Forms of Paralysis with Particular Reference to Brain Tumor and Encephalitis." The members were guests after the meeting of Dr. Charles S. Little, superintendent of Letchworth Village, at a supper which, the *New York State Journal of Medicine* says, is an annual event to which the physicians look forward with pleasure.——Dr. Henry L. Shaw, president of the Albany County Medical Society, Albany, addressed the Otsego County Medical Society at Oneonta, September 8, on "Infant Feeding"; he invited the members to an old-fashioned clam bake and dance at the Albany Country Club under the supervision of the Albany County Medical Society, September 16.

Joint Meeting on Graduate Medical Education.—A special committee on graduate medical education and the committee on public health and medical education held a joint meeting recently in Albany. There was a lengthy discussion of the principles involved in the graduate education plan of the state medical society. Formal resolutions were passed to the effect that: (1) the state committee shall work through the county and district societies and that no course shall be given except through one of them; (2) the courses in pediatrics and obstetrics that have proven successful shall be offered to the county societies as courses already avail-

able; (3) the moving picture films on tuberculosis and gastric ulcer shall be offered to the district branches for use in their annual meeting; (4) the chairman shall appoint a subcommittee to prepare short courses and find out from medical schools whether they would be willing to help; (5) the chairman was authorized to arrange for such clinical lectures as the Orange County Medical Society may request in continuation of the course in operation. Dr. Charles A. Gordon, chairman of the committee on public health and education, sent a questionnaire to every county society to find out, among other things, what would be attractive to members in graduate teaching, what the county societies are doing in graduate medical teaching, what facilities exist in the county to conduct extension courses, and whether physicians of the county who are not members of the state society should be included.

New York City

Speech Clinic Opens.—The New York University Speech Clinic, which operated last year, opened again, October 2, at the Washington Square Building of the University. The clinic is said to be the only one of its kind connected with a university in this country.

Director of Publicity Assigned.—The board of estimate created, October 2, the position of director of publicity and public health education in the department of health. Dr. John Oberwager, formerly assistant to Health Commissioner Monaghan, has been assigned to the new position.

More Units in Medical Center.—With the approval of the surviving donors of the Sloane Hospital for Women and the Vanderbilt Clinic, Columbia University announced, October 5, that these institutions will be moved to the new Medical Center at Broadway and One Hundred and Sixty-Fifth Street. The original agreements provided that should the medical school be moved from Fifty-Ninth Street, the university would rebuild the hospital and clinic on whatever new site was selected.

Columbia Offers Ph.D. in Public Health.—Two new positions have been filled in the Institute of Public Health of Columbia University College of Physicians and Surgeons which will permit the offering of courses leading to master in science in public health and Ph.D. in public health, the only degrees which will be offered by Columbia in this field. Dr. Alton S. Pope has assumed the duties of assistant professor in epidemiology at the institute and Dr. Frank G. Pedley that of assistant professor in industrial hygiene.

Personal.—Dr. Thomas D. Wood, chairman of the joint committee on health problems in education of the National Education Association and the American Medical Association, addressed the American Dental Association at its recent annual meeting in Louisville, Ky., on "The Cooperation of Teachers and Dentists in the Dental Hygiene of Children."——Dr. Anthony Bassler addressed the Academy of Medicine of Columbus, Ohio, October 5, on "Medical Treatment of Stomach and Intestinal Conditions."——Dr. Charles P. L. Mathe, San Francisco, will address the genito-urinary surgery section of the New York Academy of Medicine, October 21, on "The Present Day Status of Urology in Europe."——Dr. Joseph A. Blake took up his new duties, October 1, as chief of the Tarrytown Hospital.

New Activities of Academy of Medicine.—The cornerstone of the new building of the New York Academy of Medicine will be laid, October 30, at 4:30 o'clock. From 1843 until 1924, the academy limited its activities to promoting the science and art of medicine, to the maintenance of medical library, and the promotion of public health. When it decided to expand, the Carnegie Corporation appropriated $1,550,000 for a new academy building and the Rockefeller Foundation $1,250,000 for endowment for new activities, including the appointment of a full-time director and a new executive librarian, the development of library service, the maintenance of a bureau of clinical information and the publication of a bulletin. The director of the academy, who began his duties, Jan. 1, 1924, is a member of all committees, makes special studies of affairs suggested by the council and is general superintendent of the building. The library is the only public medical library in New York City. It is open daily to the public, and the staff will be increased in order to extend its activities.

Rare Communicable Diseases in New York.—In the annual report for 1924 of the Bureau of Preventable Diseases of New York, the chief diagnostician, Dr. William L. Somerset, gives the incidence of some of the rarer communicable diseases. There were thirty-one cases of leprosy on record on Dec. 31, 1924, as against twenty-eight cases in the previous year; one patient was deported and four patients with leprosy came to the city during the year; ten patients were being treated at Riverside Hospital and the others at various clinics. There were fourteen cases of typhus fever during the year and one death, and there was no connection between these cases and recent immigrants. There were twelve cases of trichiniasis with one death; several patients became ill after an absence from the city, indicating a probability of infection elsewhere. There were twenty-eight cases of tetanus in the city, with twenty-three deaths, and three of these occurred in drug addicts. There was one case of anthrax, for which no source of contagion was discoverable; the patient recovered; there is a steadily decreasing incidence in anthrax in the city. There were only four cases of smallpox reported in Greater New York in 1924, and they were all mild. There were no cases of rabies or glanders. There were two cases of rat bite fever and both patients recovered.

NORTH CAROLINA

Revocation of License Sustained.—The superior court at Durham recently sustained the action of the state board of medical examiners in revoking the license to practice medicine of Dr. Edwin H. Bowling, Durham. Dr. Bowling was convicted in the federal court twice of violations of the Harrison Narcotic Law. The board held that these convictions were evidence of unprofessional conduct within the meaning of the statute.

Diphtheria in Isolated Village.—Responding to a call for assistance, navy medical officers went by airplane to the village of Hatteras, October 3, and found cases of diphtheria in twenty-two homes in a total population of about 600 persons. There were three cases in some homes and one child died on the above date. Hatteras is a community of fishermen and their families about 30 miles off the North Carolina coast. There is no resident physician.

OHIO

Physician Sentenced for Delaying Trial.—Dr. Louis L. Rosenberg, Toledo, was sentenced to ten days in jail and fined the costs, September 29, it is reported, on a charge of aiding in the removal of a court witness. Dr. Rosenberg, it is alleged, signed a certificate to the effect that J. C. Roberts, who was charged with liquor violation, was ill and unable to appear in court. A policeman, however, reported that Roberts was not ill and brought him into court.

Personal.—Dr. Otto P. Geier, Cincinnati, who recently returned from the International Conference on Industrial Medicine at Geneva, Switzerland, presented to Dr. Frank G. Boudreau, formerly chief of the division of communicable diseases in Ohio, a gold watch on behalf of his associates in the state department of health. Dr. Boudreau is now epidemiologist for the League of Nations.——Dr. Melville D. Ailes, Jackson Center, has been appointed health commissioner of Sidney and Shelby County to succeed Dr. Arlington Ailes, resigned.

Health Survey of Laundries.—In a general survey of health conditions in industry in Columbus, a report has been made on laundries by Dr. Nelson C. Dysart of the health department. The investigation covered fifteen laundries, which ranged in the number of employes from two to others which employed hundreds of people. The health of laundry workers generally was found to be very good, although in 1910, 1911 and 1912 the mortality rate among laundresses for pulmonary tuberculosis was reported to be 23.49; in the same period it was 7.14 for agricultural workers. All of the laundries except one used individual drinking cups and towels; the ventilation in some was only fair, but no special health hazards were found. The next investigation will be of bakeries.

A Mother at Fifty-Nine.—During 1924, in Ohio, 130,610 mothers gave birth to living children, says the state department of health. There were 1,414 pairs of twins and eleven sets of triplets; a child was born in the state every four minutes during the year; there were 67,892 males and 64,156 females. Among the triplets twelve were females and twenty-one males; there were five sets of still-born triplets, all males. The largest number of births was in August, the lowest number in November. Four of the mothers were only twelve years of age, seven were 14, eleven were 50 years, one was 51, four were 55 and one 59 years of age; 450 mothers gave

birth to their twelfth child, 300 to the thirteenth, 123 to the fourteenth, 66 to the fifteenth, 25 to the sixteenth, 8 to the seventeenth, 5 to the eighteenth, two to the nineteenth and one to the twentieth child.

Society News.—At the one hundred and eighty-fourth regular meeting of the clinical and pathological section, Academy of Medicine of Cleveland, City Hospital, October 2, among others, Dr. Lawrence A. Pomeroy spoke on "Radium Implantation in Carcinoma of the Rectum," and Dr. Warner H. Tuckerman on "Mastoiditis with Thrombosis of the Jugular Vein and Lateral Sinus."——Dr. Clarence D. Selby, Columbus, president of the Ohio State Medical Association, addressed the General Practitioners Medical Society at a dinner at the Bliss Hotel, September 24, on "Social Service —A Menace or a Friend?"——The Five-County Medical Association, consisting of Fayette, Warren, Greene, Highland and Clinton counties, held a picnic at Hale Park, Wilmington, September 1, with the Clinton County Medical Society acting as host. Dr. George W. Crile, Cleveland, spoke on "Problems Relating to the Liver and Biliary Tract," and Dr. John H. J. Upham, Columbus, on "Medical Problems of Today." Dr. Crile spoke on the same subject before the Summit County Medical Society, September 8.——Dr. Charles A. Langdale delivered his presidential address before the Cincinnati Academy of Medicine, September 28, on "A Historical Discussion of Surgery in the Sixteenth Century."

PENNSYLVANIA

No Improvement in Seventeen Years.—The maternal mortality rate in Pennsylvania in 1906 was 6.1 per thousand confinements and in 1923 it was precisely the same. The state lost 1,373 mothers in 1923 as a result of childbirth, the two leading causes being septicemia (441 deaths) and the toxemias (366). A map prepared by the state department of health shows that the rate is not highest where the foreign population is centered, i. e., in the coal regions.

Personal.—Dr. John D. Donnelly, Harrisburg, a member of the administrative staff of the state department of health, has resigned to engage in private practice in Philadelphia. ——Dr. David P. McCune has been elected president of the McKeesport Academy of Medicine for the ensuing year, Dr. Joseph B. Feeley, vice-president, and Dr. John C. Kerr, secretary.——Dr. J. W. Leckie, Hazleton, has been appointed medical director of the new $450,000 West Mountain Sanatorium at Scranton which was opened recently. Dr. Leckie assumed his new duties, October 1.

Scholarships in Neuropsychiatry.—The dean of the Graduate School of Medicine of the University of Pennsylvania, Philadelphia, announced, October 3, that the Commonwealth Fund, New York, had appropriated $36,000 to support five scholarships in neuropsychiatry at that school, and that of thirty applications only three fellowships had been awarded to Dr. Bernard J. Alpers, Philadelphia; Dr. Forrest N. Anderson, U. S. Marine Hospital No. 3, Ellis Island, New York, and Dr. Paul E. Kubitscheck of Osawatomie, Kan. The fellowships are to be administered by a committee comprising the dean, George H. Meeker, Ph.D., Dr. Theodore H. Weisenburg and Dr. Earl D. Bond, all of the University of Pennsylvania, Dr. Frankwood E. Williams, and Dr. Ralph C. P. Truitt, medical director and director of the division on prevention of delinquency of the National Committee for Mental Hygiene, respectively, and Miss Mildred E. Scoville of the Commonwealth Fund.

Philadelphia

Sword Presented to University.—The sword of Dr. John Houston, surgeon of the Continental Army, and the diploma which he received from Glasgow University have been mounted on the stairway in Houston Hall at the University of Pennsylvania. Dr. Houston was a graduate of the university in 1769. The sword and diploma were presented to the university by Charles Warner Houston, Los Angeles, a great great grandson. The University of Pennsylvania furnished not only physicians but many other leaders in the army and in the Continental Congress.

Ground Breaking for Home of Medical Society.—Simple ceremonies marked the breaking of ground, October 3, preparatory to erecting the new auditorium for the Philadelphia County Medical Society, 2044 Spruce Street. The ground was turned by the president, Dr. Arthur C. Morgan, in the presence of the board of directors, the committee on home of the society, Dr. James M. Anders, historian, representatives of the Women's Auxiliary headed by Mrs. William E. Parke, state president of the auxiliary, and others. The nickel-plated spade used, the gift of the Kessler Construction Company, will be preserved in memory of the ceremony.

Physicians Organize for Sesqui-Centennial.—A number of prominent physicians of the city held a meeting in the interest of a Medical Division of the Sesqui-Centennial Exposition which will be held next year. Among those attending were Drs. Jay F. Schamberg, George M. Coates, Wilmer Krusen, director of the department of health, George A. Knowles, James T. Rugh, William D. Robinson, Benjamin A. Thomas, John D. McLean and Louis Lehrfield. Dr. Krusen accepted the captaincy of the team of physicians who will take an active part in the drive to secure $3,000,000 by the sale of participation certificates to expedite the construction of exhibit buildings. The meeting discussed plans for medical exhibits of both scientific and popular nature, and Drs. Schamberg, Coates, Rugh and Thomas, among others, signified their intention of active participation in the celebration by accepting the chairmanships of subcommittees.

SOUTH DAKOTA

Annual Clinic at Mitchell.—The fifth annual clinic for physicians of Mitchell will be November 5-6. There will be no operative work, dry clinics having been found, the chairman said, more popular and more instructive than the usual operations. Dr. Edward S. Judd, professor of surgery, Mayo Foundation, Rochester, Minn., will conduct a clinic on "Abdominal Surgery and Diagnosis"; Dr. Fred M. Smith, professor of medicine, State University of Iowa College of Medicine, Iowa City, on "Diseases of the Heart"; Dr. Arthur A. Sweeney, St. Paul, "Neurology and Psychiatry"; Dr. Hiram W. Orr, Lincoln, Neb., "Orthopedics"; Dr. Willis S. Lemon, Mayo Foundation, Rochester, Minn., "Diseases of the Chest"; Dr. Henry E. Michelson, University of Minnesota Medical School, Minneapolis, "Diseases of the Skin"; Dr. Rood Taylor, University of Minnesota Medical School, "Diseases of Children," and Dr. Harold I. Lillie, Mayo Foundation, Rochester, Minn., "Diseases of the Eye, Ear, Nose and Throat."

TENNESSEE

Hospital Survey Completed.—The mayor of Memphis called a meeting in the auditorium concert hall, October 16, to present to the public the report and recommendations of the hospital and health survey of Memphis made by Dr. Haven Emerson, New York. To secure a representative audience of persons interested in community welfare, invitations were sent to the members of all clubs and civic organizations. The underlying reason for the survey, the mayor said, was to coordinate the hospital building programs which both the city and county contemplate.

Society News.—At the fourth annual session of the Walnut Log Medical Society, Reelfoot Lake, September 29, Dr. Ira Park, Union City, was elected president; Dr. R. L. Motley, Dyersburg, secretary, reelected; Drs. Willis Moss, Clinton, Ky., and R. M. Little, Martin, vice presidents, and Dr. J. D. Brewer, Dyersburg, treasurer. A banquet followed the scientific session and plans were made for the purchase of a club house in the park.——The Southern Tuberculosis Conference will be held in Memphis, October 14-16, with Dr. Henry Boswell, Jr., of Sanatorium, Miss., presiding.

WASHINGTON

Golf Trophies.—Preceding the recent meeting of the state medical association at Seattle, Dr. George M. Horton, Seattle, donated a challenge cup to be played for annually. The winner this year was presented with a replica, and the winner of five annual tournaments will have permanent possession of the trophy. Dr. Joseph A. McKee gave a cup to the general practitioner of the state who won a 36-hole competition.

WISCONSIN

Vimedia Quack Ordered to Leave Town.—Mrs. Clara Mosher, an agent for the "Vimedia" line of nostrums, has been ordered by the Board of Health of Beaver Dam to leave the city. "Vimedia" is a combination of products similar to the "Viavi Treatment," both having been written up in "Nostrums and Quackery"; they are "female weakness cures." Mrs. Mosher ostensibly gives "health lectures" but actually sells the Vimedia products. She is said to have relieved Beaver Dam women of several thousand dollars in the sale

of the "treatment." Other Wisconsin cities have been warned of her activities.

Society News.—Dr. Clarence W. Hopkins, Chicago, chief surgeon of the Chicago and Northwestern Railroad, addressed the Medical Society of Milwaukee County, October 9, on "Multiple Fractures of the Pelvis Complicated by Dislocation of the Head of the Femur," and Dr. John Powers on "Case of Central Fracture of the Acetabulum Complicated by Pregnancy"; both speakers gave lantern slide illustrations. ——Dr. Jake A. Riegel, St. Croix Falls, addressed the Barron - Polk - Washburn - Sawyer - Burnett County Medical Society at Barron, September 1, on "The Typing of Pneumonia" and, among others, Dr. William H. Hengstler, St. Paul, on "Mercurochrome in Acute Infections of the Nervous System."

New Health Program in Oshkosh Schools.—The board of education of Oshkosh unanimously adopted the recommendations of the health and recreation committee for a new health program for the schools. Local physicians will be employed to examine school children and serve as advisors at the various schools. The examinations will be made to discover organic defects so that parents may have their children treated by their family physician. A card showing the results of examinations will accompany the pupil throughout his school life. The work will be correlated under the city health department. Drs. John M. Conley, Jasper W. Lockhart, John F. Schneider, William P. Wheeler, Harry H. Meusel, John F. Stein, George A. Steele, Henry W. Kleinschmidt, William A. Wagner, Hubert J. Haubrick and Edward J. Campbell were appointed to make the examinations.

Speech Clinic.—The department of speech of the University of Wisconsin maintains throughout the academic year a clinic for the diagnosis and treatment of defects of speech. The clinic is largely diagnostic for cases outside of the student body but gives advice as to the method of treatment and where it can be obtained. A limited number of widely divergent type cases will be admitted to a six weeks' course of training in a demonstration clinic which will be conducted at the 1926 summer session; applications for this clinic should be accompanied by the history and a description of the defect. Admission to both clinics is free with the understanding that advance students in the science of speech correction will be permitted to see the cases and learn their histories. Appointments must be arranged in advance with Robert West, A.M., assistant professor of speech, Bascom Hall, University of Wisconsin, Madison.

CANADA

Hospital News.—Some old buildings in Vancouver in the block bounded by Twelfth and Thirteen Avenues and Heather and Willow Streets are being demolished in order to erect the new infectious disease wing of the General Hospital. The University of British Columbia has vacated the buildings between Tenth and Twelfth Avenues which now revert to the General Hospital.

Society News.—The October *Bulletin* of the Vancouver Medical Association, Vancouver, B. C., notes the speakers for the general meetings of the society from October 6 until the annual meeting, April 20; each alternate session will be a clinical meeting. Dr. James A. Gillespie gave his presidential address, October 6, on "The Progress and Future of Medicine"; Dr. Hibbert W. Hill will discuss "The Part Played by the Laboratory in Clinical Medicine" November 3, and Drs. Wallace A. Wilson and George Lyall Hodgins "Intravenous Therapy" December 1.

GENERAL

Investigation of Otosclerosis.—At the last meeting of the board of the Carnegie Corporation of New York, $90,000 was appropriated to the American Otological Society for an investigation of otosclerosis during the next five years.

Lectures on Birth Control.—The American Birth Control League, New York, is sending Dr. James F. Cooper, director of its clinical research department, on another lecture tour beginning October 7, at Newark, N. J., and comprising lectures almost daily until December 14 in Pennsylvania, Indiana, Illinois, Missouri, Arkansas, Texas, Louisiana, Mississippi, Alabama, Georgia, Tennessee, North and South Carolina, Virginia, West Virginia, Maryland and the District of Columbia. Dr. Cooper recently completed a tour of lectures on birth control in the Western states.

Warning: Oil Stock Operator.—A physician from Michigan writes that one E. R. Williams, who claims to represent the J. H. Fookes Company of St. Louis, has been selling Standard Oil stock in his community and that he bought some "stock." Failing to receive his certificates, he wrote to the Standard Oil Company in New York and St. Louis and to the Michigan Securities Commission and learned that there is no J. H. Fookes Company and that Williams is not authorized to sell stock in the state of Michigan. Williams has dark hair, prominent nose, large mouth, some gold filled teeth; wears glasses and is of medium height. He called on our correspondent two years ago to sell oil stock, but failed then to make "a sale."

National Board of Medical Examiners.—Connecticut now permits its examining board to grant licenses to physicians who hold the certificate of the National Board of Medical Examiners without further examination, making thirty-three states, Porto Rico and the Canal Zone which accept this certificate; 2,212 candidates have been examined since the national board's first examination, and 78 per cent. of them have passed; the number of candidates for the certificates has increased from ten, who took the first examination in Washington, D. C., October, 1916, to 978, who were examined during 1924. There will be an examination in Part III in Baltimore, October 13-16; Boston, October 26-29; Chicago, in December, and New York, in January. Candidates for these examinations should notify the board at 1600 Walnut Street, Philadelphia, at once.

Golden Rule Sunday.—The Near East Relief announces that the third annual observance of Golden Rule Sunday will be December 6. The public is requested to eat a humble meal such as homeless children under the care of Americans in the Near East eat every day in the year, and then to make a contribution to help these children. Dr. Wendell C. Phillips, New York, President-Elect of the American Medical Association, has accepted the chairmanship of the Golden Rule Sunday Cooperating Committee, which aims to promote international good will and to focus attention on the needs of the war orphans of the Near East. The appeal for funds last year was to aid 50,000 orphans; there are today about 35,000 in need, the others have either been adopted by families or placed at work in industries. Of the 35,000 who still need aid, 80 per cent. of them are less than 14 years of age. Orphanage centers under the control of Near East Relief are located in Syria, Palestine, Greece and Russian Armenia. In all of these orphanages industrial training is part of the program; nurses' training schools in Athens and Alexandropol have been organized where the older orphan girls are given training. Near East Relief has initiated medical work among these orphans and refugees; in Macedonia malaria has been reduced as a result of its campaign; the absence of typhus this year is attributed largely to precautions taken by Near East Relief workers cooperating with government agencies.

Society News.—The second annual meeting of the Eastern Society of Anesthetists will be at Philadelphia, October 26-30, at the Hotel Adelphia. There will be clinics in the mornings and discussions open to members of the profession in the afternoons, also joint sessions with the Mid-Western Association of Anesthetists, the Philadelphia Academy of Stomatology and the American Society of Regional Anesthesia. The dinner-dance will be October 28. Dr. Adolph F. Erdmann will deliver the president's address, 2:30, October 26. ——At the thirty-eighth annual convention of the Medical Society of the Missouri Valley, St. Joseph, October 1, Dr. A. D. Dunn, professor of experimental medicine, Nebraska University College of Medicine, Omaha, was elected president; Drs. H. W. Carle, St. Joseph, Mo., M. A. Tinley, Council Bluffs, Iowa, vice presidents; Dr. Charles W. Fassett, Kansas City, Mo., secretary, and Dr. O. C. Gebhart, St. Joseph, Mo., treasurer. The next annual meeting will be at Council Bluffs.——The foreign guests at the fifteenth annual meeting of the clinical congress of the American College of Surgeons, Philadelphia, October 26-30, will be Lord Dawson of Penn, London, physician in ordinary to the king; Sir William Arbuthnot Lane, London, who will deliver the John B. Murphy Oration in Surgery; Prof. Vittorio Putti, Bologna, Italy, who will speak on some phase of orthopedic surgery; Dr. Victor Pauchet, Paris, professor of clinical surgery in the School of Medicine at Amiens, who will read a paper on "Experiences in the Surgical Treatment of Gastric, Duodenal and Jejunal Ulcers"; Dr. William Blair-Bell, professor of obstetrics and gynecology, University of Liverpool, England, and Dr. Philip J. Franklin, London, eye, ear,

nose and throat surgeon to the East London Hospital. Headquarters will be at the Bellevue-Stratford Hotel. At the meeting, Monday evening, the president of the congress, Dr. Charles H. Mayo, Rochester, Minn., will induct into office his successor, Dr. Rudolph Matas, New Orleans.——At the recent annual meeting of the American Dental Association, Louisville, Ky., Dr. Sheppard W. Foster, Atlanta, was installed as president; Dr. John F. Biddle, Pittsburgh, was made president-elect; Drs. E. C. Hume, Louisville, Ky., George W. Hillias, Kansas City, Mo., and George W. Dick, Sumter, S. C., vice presidents; Dr. Otto U. King, Chicago, general secretary, reelected, and Dr. Arthur R. Melendy, Knoxville, Tenn., treasurer, reelected. The 1926 meeting will be at Philadelphia during the International Dental Congress.

FOREIGN

Richer Radium Ores.—The *Bruxelles-médical* states that the factory near Oolen producing radium from the Congo ore has turned out a total of 150 gm. of radium, 4 gm. a month on an average. Our exchange adds that there are only 310 gm. of radium known in the world to date. Certain minerals of the Congo, it is said, contain 60 per cent. of the radium-bearing uranium ore, while the United States mines had only 2 per cent.

Prize Essay on Maternal Mortality.—The permanent committee for postgraduate work of Melbourne, Australia, has awarded the prize for the best essay on maternal morbidity and mortality to Dr. E. S. Morris, of the department of public health, New South Wales, whose subject was "Salus Populi Suprema Lex." Sixteen essays were submitted. The winner will be published in the *Medical Journal of Australia*. The prize of 150 guineas was donated anonymously.

Proposed International Malaria Institute.—At the International Antimalarial Congress, Rome, October 5, the establishment of an international institute in that city for the study of malaria was endorsed by the Italian government, which promised support. The proposal was referred to the council of the congress for recommendation to the governments represented. The institute (it was proposed by the Argentine delegation) would gather information on malaria, conduct research and establish courses for physicians who desire to make a special study of malaria. The American delegation to the congress included, among others, Dr. L. W. Hackett, of the Rockefeller Foundation; Dr. Walter W. King, U. S. Public Health Service, stationed at Paris; Drs. William G. MacCallum and William S. Thayer, both of Johns Hopkins University Medical Department, Baltimore, and Dr. Richard P. Strong of Harvard University Medical School, Boston.

International Congress on Occupational Diseases and Hygiene.—The thirteen addresses at the general assembly at this meeting at Amsterdam in September have been published in a pamphlet by the *Nederlandsch Tijdschrift voor Geneeskunde*. Two addresses are in English, "Compensation to Workmen in Great Britain," by J. Glaister, and "Some Achievements of Industrial Legislation and Hygiene," by Sir Thomas Oliver; in German, F. Sauerbruch's "Tumor and Trauma," L. Teleky's "Conception and Diagnosis of Occupational Affections," R. Allers' "Fatigue," A. Wittek's "Hand Injuries," J. Akerman's "Fracture of Neck of the Femur and Compensation for This Disability," and F. Zollinger's "Tuberculosis and Trauma." The French speakers were O. Crouzon, "Occupational Nervous Maladies," B. Cuneo, "Accidents and Maladies," and A. Oller, "Functional Readaptation of the Disabled." L. Devoto, chief of the clinic at Milan exclusively devoted to occupational affections, spoke on "Pathology of the Cardiovascular Apparatus of Occupational Origin." L. Heijermans spoke in French on "Obtaining Employment for the Manually Handicapped." The address of the *Nederlandsch Tijdschrift* is Nicolaas Maesstraat 89, Amsterdam, Netherlands.

Deaths in Other Countries

Dr. **Roy Charles Merryweather**, Perth, Australia, formerly president of the Western Australian Branch of the British Medical Association and senior honorary physician at the Perth Public Hospital, July 14, of angina pectoris.——Dr. **Marie Parhon**, Jassy, noted for research in biology.——Dr. **R. Medina Jiménez**, Caracas, secretary of the Academia Nacional de Medicine, recently returned from an official mission to study malaria abroad.——Three physicians lost their lives in a recent automobile accident at the Furca, in Switzerland, Dr. **F. Grob**, Dr. **Plattner** and Dr. **Lichtenhahn-Brenner**, all of Chur or Basel.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 26, 1925.

Sir Francis Darwin

The passing of Sir Francis Darwin, botanist and biographer of his father, has a special interest for the medical profession. The third son of Charles Darwin, he was born in 1848 and was educated at Trinity College, Cambridge. After obtaining a first class in the natural sciences tripos in 1870, he completed a medical course at St. George's Hospital, London, and proceeded to the degree of M.B., but he never practiced. Like several other botanists of his generation, he studied under Sachs at the University of Wurzburg. On leaving the hospital he returned home and for eight years was his father's secretary and assistant. In 1882 he was elected a fellow of the Royal Society. From 1884 to 1888 he was university lecturer in botany at Cambridge. From 1892 to 1895 he was deputy to Professor Babington. He gave most of his time to teaching and research in plant physiology, and largely through his efforts the practical training of students in this subject was more thorough at Cambridge than at other British universities. In 1904 he collaborated with the late E. H. Acton in publishing a "Practical Physiology of Plants," a book which exercised a wide influence. His researches in plant physiology followed two main lines: 1. Researches on movement, with especial reference to the localization of irritability, which his father discovered in the root tip, and generally to the views propounded in "The Movements of Plants." The outcome was to provide considerable experimental evidence in support of Charles Darwin's views and to support the idea of the localization of sense organs, which is now generally accepted. 2. Researches on the opening and closing of stomata with reference to the physiology of transpiration. He was an ingenious and able experimenter and, like his father, preferred simple apparatus and his own contrivances. At the time of the Darwin celebrations he published "Foundations of the Origin of Species," one of many proofs of his veneration for his father's work. His "Life and Letters of Charles Darwin" is in the first rank of biographies. His chief object was to portray his father's character and he succeeded remarkably in giving a picture of the man and the student, his methods and the gradual development of his opinions. His father's love of animals, his courtesy to those who served him, his consideration for others, his modesty and his high standard of honor in his treatment of other authors, are some of the many traits inherited to a marked degree by the son.

The Boric Acid Controversy

The controversy, previously mentioned, as to whether boric acid in the quantities used for preserving food is injurious, continues. A genito-urinary surgeon wrote to the *Times* against the coming prohibition because he found boric acid in daily doses of 20 grains (1.3 gm.) well tolerated by most of his patients. He admitted, however, that in some cases there was idiosyncrasy to the drug which might cause loss of appetite, vomiting and eruptions. Mr. A. G. Foulerton, an authority on pathology and hygiene, in replying to him points out that he might have added albuminuria and even death among the possible effects of boric acid administered in medicinal doses to persons with the idiosyncrasy. Mr. Foulerton adds that boric acid is an antiseptic and not a disinfectant or germicidal drug. It merely inhibits temporarily the multiplication of bacteria; it does not destroy them. In sufficient concentration it checks and masks putre-

faction. A sausage made from unsound meat, if perserved with boric acid, will remain inoffensive to the nose before the actual stage of putrefaction. But when the food is taken into the stomach the boric acid becomes diluted, the antiseptic action of the drug is lost, and the dormant bacilli will resume their activity. Mr. Foulerton also suggests that it is probable that the small doses of boric acid now taken with food are one of the causes of the prevalence of kidney disease. Kister has shown that the administration of boric acid in pharmacopeial doses (from 40 to 50 grains [2.6 to 3.25 gm.] daily) to strong, healthy men is followed after from four to ten days by albuminuria—a sign of irritative action on the kidneys. A drug which in somewhat large doses will do this, in smaller doses day by day and year by year would predispose to or cause renal disease. In the British pharmacopeia for 1885 the dose of boric acid was given as from 5 to 30 grains (0.3 to 2 gm.). Numerous cases of poisoning were recorded, and in the next edition (1898) the maximum dose was reduced to 15 grains (1 gm.). Take the case of a baby of 12 months brought up on cow's milk. The minimum amount of boric acid required to preserve milk is about 1 part in 1,000, or about 7 grains (0.5 gm.) to the pint (236 c.c.). The baby will require 2 pints (475 c.c.) of milk daily, which if boricized will mean a dose of 14 grains (1 gm.) of the acid. The medicinal daily dose, calculated from the adult dose, would be from 1¼ to 3¾ grains (0.08 to 0.24 gm.). As a matter of fact, it has been found that boricized milk may cause serious bowel disorder in infants. At present, adults may take boric acid in a large variety of foods. Sausages may contain 45 grains (3 gm.) to the pound (450 gm.); American bacon, anything up to 100 grains (6.5 gm.) to the pound. The drugging of food with substances such as boric or salicylic acid is quite unnecessary. In France, Germany, Holland, Italy, Spain and the United States, boric acid is prohibited as a food preservative. The attitude of the United States is instructive. Under the federal Food and Drugs Act of 1912, the interstate transport of boricized food is prohibited; and many states have prohibited its use within their borders. But federal law allows the exploitation of the British market: "Food products intended for export may contain added substances not permitted in food for interstate commerce, when the addition of such substances does not conflict with the laws of the country to which the food products are to be exported."

The Therapeutic Substances Act

An act has just been passed to provide for the control of the quality and authenticity of such therapeutic substances as cannot be tested adequately by direct chemical means. These consist of three groups. The first consists of biologic products (vaccines, serums, toxins, antitoxins and antigens); the second, of synthetic substances (arsphenamin and its analogues); and the third, of insulin and preparations of the pituitary gland; the manufacture of the scheduled substances is to be conducted only by persons and on premises specially licensed for the purpose, and under such conditions as may be laid down by the licensing authority. A committee has been appointed which is empowered to make regulations prescribing the standard of strength, quality and purity of any substance to which the act applies, the tests to be used, the units of standardization, the form of license and the conditions of issue. All imports must be consigned to a person licensed for the purpose and must comply with the standards in force for the home products.

Metal Artificial Limbs

A committee of inquiry appointed by the ministry of pensions shows that the all metal artificial leg is the most popular with pensioners, as it also in many cases is the most suitable from the surgical point of view. All the legs issued, with the exception of very few of the Anglesey pattern, fall into two types—the Desoutter and the Hanger-Blatchford. The prices vary from $230 for a leg for hip-joint amputation to $100 for amputation below the knee. The experts agreed that the two firms making these limbs were producing articles of outstanding design and workmanship, with a standard of fitting which gave satisfaction to both surgeon and pensioner. The committee therefore recommended that the makers employed by the ministry should be reduced to these two firms. By doing this, partial standardization will be achieved, as, while the Desoutter limb is in a category by itself, the Hanger limb is fairly representative of the other limbs now in use. There are a few exceptional cases which require special artificial limbs. The report recommends that these should continue to be provided by the ministry, on the certificate of a board of surgeons that none of the approved limbs are suitable.

The "E. R. A." Cult in New Zealand

The practice by physicians of unscientific cults, such as Abrams' method, does not receive the same indulgence in New Zealand as in England. A physician had his name removed from the medical register of New Zealand at the instance of the medical board, because he practiced the Abrams method in the diagnosis and treatment of cancer in such a manner as to show that he could not have honestly believed it was useful. The case was then taken to the court of appeal. In delivering judgment, Mr. Justice Sim said that the medical practitioners' amendment act of 1924 provided that no medical practitioner shall be deemed guilty of grave impropriety or infamous conduct in a professional respect by reason only of his having adopted and practiced any theory of medicine or surgery if in so doing he has acted honestly and in good faith. But he confirmed the judgment of the lower court. The question of the value of the Abrams system was not directly at issue in the case, he said, the only question being whether the defendant had acted honestly and in good faith. The evidence showed that although he might have believed to some extent in the Abrams system, he used it not for the purpose of benefiting the unfortunate sufferers who came to him for relief, but for the purpose of exploiting them to his own pecuniary advantage. The order fixed two years as the time after which the physician could apply for reregistration. Mr. Justice Sim thought it unfortunate that any period was fixed, for it seemed undesirable that such a practitioner by obtaining reregistration should be enabled to prey on the public.

Dozing at the Wheel

In connection with the sad death from a motor accident of a young Newcastle surgeon of much promise, the *British Medical Journal* calls attention to a possible cause of mysterious motor accidents. Mr. Hamilton Drummond was driving a car, which swerved suddenly to the left, ran into a gate, and overturned. At the inquest it was reported that he said: "I dozed over, pulled in, could not recover. Have you ever had that experience? I have done that before, but once too often." The *British Medical Journal* points out that such an accident may easily occur with a tired driver, soothed to somnolence by the rhythm of the engine and the monotonous grind of the gear. A physician on one occasion, while his new car was being driven by an employee of the manufacturers, suddenly noticed that the driver was slipping down between the steering pillar and the seat. The man was asleep. He explained the occurrence by saying that he had been driving for three days and nights. Physicians must be more liable than most people to the risk of falling asleep at the wheel, since they often have long days of tiring work. Since Mr. Drummond's death, other physicians have related their terrifying experiences of dozing while driving. More than

one said that when he found the inclination to sleep overpowering he pulled to the side of the road and took a short nap.

Drastic Powers for Dealing with Tuberculous Patients

New and drastic powers for dealing with tuberculous patients have just come into force. Tuberculosis is now put in the same category as the acute infectious disease, such as scarlet fever and typhoid. The patients may be removed from their homes and taken to a special hospital and there detained. If the patient refuses to go, the local authorities may apply to a court for an order for his removal.

A Medical Insurance Scheme for the Middle Classes

While our politicians produce one scheme after another for spending the money of the overburdened taxpayer on what they are pleased to call "social reform" for the supposed benefit of those to whom, by a strange perversion of language, the term "working classes" is confined, nothing is done for the middle classes, who are morally and intellectually the superior people of the country, on whom progress in civilization has always depended. A large part of these unhappy people are now so crushed between high taxation on the one side and high prices on the other that they cannot afford to be ill, much less pay the heavy costs of an operation. Some time ago Lord Dawson of Penn, physician to the London Hospital, made the suggestion that the lamentable plight of the middle classes might be remedied by a system of insurance. But insurance experts shook their heads and declared that the cost would be too heavy for the persons requiring insurance. Incidentally, it may be remarked that they have to pay the greater part of the expense of insuring the "working classes." However, after much preliminary labor a scheme has been launched in Manchester by a company called the Family Medical Services, Ltd. The scheme is divided into two parts: first, general practitioners' fees for the whole of a family per annum; second, the cost of operations. The person who insures his family must bear a portion of the fees paid for medical attendance himself. What he receives from the underwriters will be the excess over that minimum. This seems a very wise provision, for under the national insurance system much time is wasted in dealing with persons with imaginary or trivial ailments, who would never trouble a physician if they had to pay. The ordinary rates apply to men up to 45, women up to 40 and children over 12. Children under 2 years are not accepted, and between 2 and 12 years extra premiums are charged. Also for men between 45 and 50 and women between 40 and 50 there is an extra charge of 25 per cent. No insurance is accepted on any age over 50 at entry. The whole of a family must be insured, and reductions are allowed when the number insured exceeds three. The premiums vary with the class of physician employed (i. e., with the fees). For visits not exceeding $2 the annual amount borne by the insured is $12.50, plus $3.75 for every person insured over two. A medical examination is not required on entry, but the proposal form contains detailed and exhaustive questions in order to protect the underwriters against adverse selection. The second scheme, which provides for surgical operations, is more urgent, because many middle class persons can provide for ordinary medical attendance who could not stand the heavy cost of a major operation, with the nursing and other expenses. In all cases one fifth of the cost must be borne by the insured. There are four scales according to the fees provided for. The highest scale provides $250 for a minor operation, $500 for a major operation, and $500 for nursing and other charges, with a limit of $1,000 per annum for each person. The additional premium for this is $10. Whether the scheme will prove successful remains to be seen.

BUENOS AIRES

(From Our Regular Correspondent)

Sept. 12, 1925.

Medical School Officers

Appointments have been made to the directing board of the Buenos Aires Medical School, as follows: Drs. Castex, Tamini, Speroni, Acuña and Elizalde, by the professors; Drs. Ivanissevich and Usolenghi, by the students. Drs. U. Fernández and J. Iribarne have been appointed delegates of the medical school to the superior university board.

The Alleged Serum Therapy of Syphilis

Some time ago, Drs. Lancelotti and Jáureguy announced before the National Academy of Medicine that they had inoculated human syphilis in the llama, these animals showing in a few years visceral and nervous lesions. They also described their having secured serial cultures of *Spirochaeta pallida*, which, after inoculation in the llama, yielded a serum curative of syphilis in this animal, and also offering some promise in man. They went next to Europe and presented their work to the Paris Academy of Medicine, the Pasteur Institute, Genoa, and elsewhere. All the local newspapers published repeated laudatory comments.

The alleged scientists returned to this country, for which, they claimed, their first reports were reserved. Months went by but no report was forthcoming, but advertisements of their willingness to treat patients appeared in the newspapers. After several months' watchful waiting, the Society of Biology invited both physicians to submit their evidence. The reply intimated that this would soon be presented. The Society of Dermatology repeated the invitation, but the only answer was a newspaper tirade challenging the competence of dermatologists to pass on the merits of the work. In the meantime, a number of misstatements have been found in the assertions made by both men: 1. The Paris Academy of Medicine did not endorse their work but only stated it would prove interesting to see it verified. 2. Professor Muhlens did not see and verify their cultures. 3. It is not a fact that the efficiency of the serum should have been verified in the Rawson Hospital (Dr. Seminario's service).

It may be added that Dr. Morales Villazón has stated that he had previously made attempts at immunizing the llama, but unsuccessfully.

Histologic Course

None of the foreign professors who have visited this country have made such a deep impression as Dr. P. del Río Hortega, the histologist sent by the Post-Graduate Board of Madrid. Instead of confining himself to lectures, del Río Hortega gave actual laboratory demonstrations in normal and pathologic histology during his three months' stay. This has aroused the interest of both professors and physicians, who are now carrying out studies and experiments in accordance with the Spanish investigator's views and technic. The Academy of Medicine has appointed del Río Hortega a corresponding member.

Foreign Professors

Prof. G. Fichera of Pavia has given a series of interesting lectures on cancer.——The lectures on gastro-intestinal surgery and pathology by Prof. P. Duval, the Paris surgeon, also proved very successful.——Prof. L. Bernard, on behalf of the League of Nations, also made a brief tour here, devoting special attention to antituberculosis work.

Revision of the Curriculum

The Buenos Aires Medical Faculty will presently begin to discuss changes in the curriculum. It seems, however, that no radical reforms will be introduced. We shall go back, in all probability, to the seven-year course: three preclinical

years devoted to anatomy (normal anatomy two years, and topographic anatomy one year), histology, physiology and biologic chemistry, and four clinical years with compulsory separate examinations for each special branch. The middle course examinations seem doomed, as they have proved a failure and leave only twenty-five or thirty hours for each subject. The examinations actually take up from 100 to 300 hours of the professor's time each year, while only eighty or ninety are devoted to real class work. In addition, the students flit from one examination to another, center their mind on passing them, and have no time left for serious study.

There is a tendency to limit the number of medical students, as there are more than 5,000 in Buenos Aires and 1,500 at Rosario. Some professors must teach more than 800 students. There is neither room nor facilities for such a number. The net result is that many graduates lack the necessary experience. On top of the present excess of physicians here, there are yearly over 400 graduates per 10,000 inhabitants.

New institutes will be opened especially for the chairs of clinical medicine and clinical pediatrics. A building for the dentistry school is also planned.

Sanitary Work

After a tour of inspection through the coast provinces, Dr. Aráoz Alfaro, the head of the public health department, has decided to establish a public health station at Concordia and another at Paso de los Libres. Their work will be centered on child mortality, tuberculosis and trachoma, all these conditions showing undue prevalence rates.

The government of the Santa Fe province has devoted 350,000 pesos (about $140,000) to the construction of a home for the insane, to be placed under the control of the Rosario medical school.

Rockefeller Aid

In accordance with a request from the national health department, the Rockefeller Foundation has sent a committee, including Drs. G. Strode and N. G. Davis, to organize the antimalarial work in the northern districts. The committee has visited Salta, Jujuy and Tucumán provinces and will soon have a plan ready for the work to be conducted next year.

Personal

Dr. R. Argañaraz has been appointed professor of pediatrics in the Buenos Aires medical school.

Dr. Angel Centeno, emeritus professor of pediatrics and for many years the teacher of the vast majority of Argentine pediatricians, has died.

BERLIN

(From Our Regular Correspondent)

Sept. 26, 1925.

The Session of the League of German Medical Societies

About the middle of September, the forty-fourth session of the league of German medical societies (Der deutsche Aerztevereinsbund) was held in Leipzig. The total membership of the league comprises 39,000 physicians, by far the majority of the medical profession of Germany. As an economic auxiliary of the league, the Leipziger Verband was created in 1900, to oppose the growing domination of the *Krankenkassen*, or health insurance societies. In honor of its founder, Dr. Hartmann, the name Leipziger Verband was changed, two years ago, to the Hartmann Bund. For the reason that September 13 was the twenty-fifth anniversary of the Bund, this year's session had a commemorative aspect. Therefore, the meetings of the Deutscher Aerztevereinsbund and of the Hartmann Bund were exceptionally well attended. Several of the subjects discussed have interest beyond the borders of Germany.

Dr. Vollmann, gynecologist and editor of the official organ of the Deutscher Aerztevereinsbund, discussed the increased incidence of abortion in Germany. Vollmann raised the question whether induced abortion had increased to the extent of an epidemic. There are no exact statistics on miscarriages, but from the figures of the hospitals and lying-in institutions and the reports of gynecologists, reliable conclusions may be drawn. Thirty or forty years ago, there were about nine or ten miscarriages to 100 pregnancies. Now the number is several times that—in Berlin, around forty. This increase is due to artificial interventions. In the Berlin University Women's Hospital, Bumm established that in 1916 89 per cent. of miscarriages were purposely induced. According to Hirsch in Berlin, the percentage was 78 per cent., and for the 31-36 age-group even 98 per cent Such destruction of infantile life will naturally affect the birth rate. In 1901, the birth rate in Germany per thousand population was 36.9; but for Berlin it was only 27.7, and in 1923 dropped to 21.6. As against the 1,612,000 births in Germany in 1921, it is estimated, therefore, that there were 400,000 induced miscarriages. Besides the dangers for the state and nation, there are the dangers for the individual woman: acute and chronic abdominal diseases and high mortality. In 1922, abortion and miscarriage claimed a third as many victims in women of the 20-40 age-group as tuberculosis.

After discussing the historical, social, judicial and medical aspects of the problem, and after considering, favorably and unfavorably, the abolition of the law prohibiting abortion, Vollmann presented his views on the attitude of the state toward the problem. He opposes abolition of the abortion laws but would approve modifications permitting the judge to remit penalties in individual cases attended by certain distressing circumstances or impelling motives. Interruption of pregnancy which resulted from legally proved rape should not be prohibited by law. He is opposed to making a proposed induction of abortion notifiable by physicians. The sole result of such a law would be to prevent women suffering from the effects of abortion from taking advantage of skilled medical assistance. Interruption of pregnancy by a physician, carried out according to the best teachings of medicine, particularly when performed to eliminate a menace to the pregnant woman, should be permitted by law. Such interruption of pregnancy may not be undertaken for social or economic considerations, for these are not within the jurisdiction of the physician. So-called eugenic motivation (to prevent the birth of physically and mentally inferior offspring), Vollmann explained, is based on considerations that are still too unsettled to guide physicians. Aside from emergency cases, a physician should never induce abortion without consulting with at least one other physician—if possible a specialist in the branch of medicine concerned. The best method—at least in the cities—is for the local medical association to appoint physicians to serve as a board of consultation. The result of the consultation should be put in writing, with the basis for the conclusions explained. The document should be sealed and transmitted for preservation to the *Aerztekammer* (chamber of physicians), or, if there is none, to some similar medical body. The general public needs enlightenment on the biology of pregnancy and the dangers of its interruption.

Finally, viewing the recent manifestations as an epidemic, the causes should be sought that they may be eliminated. In this respect, the state has been neglectful. The state, which protects the unborn child, and compels the mother (or parents) in advance of the child's birth, to assume the care of the offspring, takes on itself certain duties. Therefore, Vollmann recommends: (1) special protection of large

families (to prevent cultured nations from dying out) through remission of taxes; additional state aid for large families, for educational purposes; special privileges in the selection of dwellings; preference in land grants; remission of taxes on dwellings; favoring of officials, workmen and employees with large families; (2) endeavors to inculcate in the people a better appreciation of the value of family life; (3) municipal or communal aid for pregnant women, protection in industrial life, proper prenatal and postnatal care, cash benefits for nursing mothers; (4) protection of the unmarried mother and of children born out of wedlock, home-finding for homeless infants, with adoption made easier, and better homes for foundlings.

A number of Vollmann's recommendations were adopted by the congress. It was brought out that the spread of abortion could not be combated solely by federal and police enactments. On the other hand, the abolition of the penalties for violations of the abortion law, as proposed by the social democrats and some of the feminine advocates of women's rights, was rigorously opposed. The congress admitted, however, that in some cases a milder penalty might be indicated, and presented proposals with respect to modifications in the law.

A Proposed Federal Code Pertaining to Physicians

For some time, German physicians have sought to secure the passage of a federal code pertaining to the physicians of entire Germany, to be patterned on the federal code pertaining to attorneys. At present, aside from certain provisions in some federal laws; for example, the laws pertaining to the regulation of industries and to the organization of social insurance, the legal regulation of medical matters is a delegated power of the eighteen individual states. The result is, there is no medical body in Bavaria corresponding to the *Aerztekammern*, or "chambers of physicians," which exist in Prussia, while Prussia lacks the state insurance system for physicians, which has been created in Bavaria. The proposed code opens as follows: "The mission of the German physician is the performance of health service for the German people. The exercise of the medical profession is not an industrial undertaking performed solely as a means of making a living but must be viewed as the performance of an individual service in the care of patients and as a general service in the promotion of the welfare of the state. Undue accentuation of the commercial side of professional activities exerts a lowering effect on the morale of the profession." The main object of a code is proclaimed to be the preservation to the German people of a medical profession that is imbued with these ideals. There follows a number of provisions, such as the right of privileged communication, and some others, which are hallowed by ancient custom. An outcropping of ultramodern views, however, is the statement that the avowal of scientific, political or religious views as such, if presented in an unobjectionable way, shall not constitute a violation of the ethical code.

The health insurance societies often endeavor to convince the general public that physicians are fighting the whole system of health insurance if they but try to protect themselves against the inordinate demands of the executive committees of the *Krankenkassen*. It is therefore important that the ethical code should contain this statement: "Every physician must, to the best of his ability, promote all movements looking toward the betterment of public health, and must likewise carry out the provisions of social legislation. He must be constantly mindful in the interest of public welfare of the importance of this duty. Every physician must, within the sphere of his activity, cooperate in the prevention and in the limitation of epidemics and must not think he has done his full duty if he complies with the laws pertaining to the notification of disease." For the same reasons, conceptions regarding the rightfulness of interrupting pregnancy and bringing on sterility must correspond with the ethical code. In accordance with usual medical ethics, the proposed law provides that a physician develop his practice by his performances and not by means of advertisements, underbidding and similar methods. The physician must show proper consideration for the situation of the patient; he shall be permitted, in dealing with poor persons, to remit part or all of the fee. In evidently urgent cases he must give treatment without advance payment. In urgent cases, he must assist another physician when requested. He must not oppose the calling in of a second physician, specialist or consultant. A consultant must not refuse a consultation without having good reason. In order that the relations between physicians may be harmonious, old customs are reduced to written form; for example, the rules governing relations with patients of other physicians; the required qualifications of a specialist; on what basis recognition as a specialist can be demanded of other physicians; the relations between attending physician and consultant. Other provisions seek to dignify applications for medical posts and the drawing up of contracts. One provision deals with partnerships. While such partnerships have long been common in the United States, it is only of late that they have become more frequent in Germany. No objections are raised to partnerships as such, although it is thought they should be confined to agreements between general practitioners or between physicians practicing the same specialty. Presumably, the wording of the provision is intended to prevent too much commercialism and is based on the same considerations that actuated the provision against a physician receiving from a specialist any reward for referring patients to him. Many speakers suggested modifications in the draft. The view was also expressed that where the unwritten laws of medical ethics fail to accomplish their purpose a written code also will be ineffective. At the close, all proposals requiring further consideration were referred to a committee. The preparation of a draft for a federal code pertaining to physicians was turned over to the business committee.

BUCHAREST

(From Our Regular Correspondent)

Sept. 18, 1925.

Preventive Injections Against Infectious Diseases of Children

Dr. Alois Soriceanu, assistant at a large children's clinic in Transylvania, says that measles and diphtheria seem to be now under our control. Two thousand preventive injections of convalescents' serum failed to protect in less than 4 per cent., and even here the technic may have been at fault. The Cantacuzino Serum Works in Bucharest is now making arrangements to supply convalescents' serum regularly to institutions threatened with measles. He mentions that he injected 116 children who had been exposed to measles from two to six days before with 20 c.c. of blood from adults or older children who presumably had had measles at some time. Only twelve developed measles, and these in a mild form. He endorses Dr. Rietschel's recommendation of this as valuable prophylaxis for infants and young children in the home, whether or not the effect is to be interpreted as a specific or merely a protein reaction. But scarlet fever prophylaxis is less promising. Soriceanu on five occasions injected a total of twenty contacts with scarlet fever convalescents' serum, and none developed the disease; only three developed it among eighty-eight in an institution, and two of twenty-eight family cases in another physician's practice. The protection proved effectual in thirty-five other contacts

injected and isolated at once. The whole question of scarlet fever is still unsolved, says Dr. Soriceanu. His final word is that neither active nor passive immunization has proved of any avail against whooping cough.

New Health Bill

The Roumanian government has introduced a new measure dealing with public health administration. The main features are that the existing board of public health, which is a body of lay municipal representatives, is to be replaced by a commission of twelve members nominated by the ministry of health. In the bill as it stands, four of these are to be medical men, but it is possible that this will be altered, as the medical profession in Roumania will demand that still more medical men be nominated. The most hopeful provision of the bill is the power given to create health areas under whole-time officers, but it all remains to be done by proclamation. The socialists and a section of the press clamor for some measure of free medical attendance by government physicians, but it is improbable that much in that direction will be enacted under the present bill. At the same time, the health of the people has become a political catchword in both political parties which endeavor to form the new government, so that whatever party may win, the public health will benefit. It appears almost certain that some proposal for a national medical service of a clinical nature will be instituted. In Transylvania a considerable degree of state medical attendance already exists, and many big hospitals have been government institutions for many years.

Health Bureau in Schools

To safeguard children against the spread of disease and improve the sanitation of houses in the congested quarters of Bucharest, the board of education is planning the establishment of a bureau of health. Many of the trustees favor the plan, and if enough votes can be secured in the board, the scheme will be put to a practical test as soon as the public schools are opened for the fall term. The plan is to have the schools visited by competent medical inspectors, to learn from the school children of illness in their homes. As soon as information is obtained, the affected household will be visited, and every effort made to guard against spread of the disease, and also to improve the sanitary conditions. Teachers will be requested to report cases of illness and houses which they know are not sanitary to the bureau.

Albuminuria in Relation to Diabetes

According to Dr. Hatziegan of Cluj University clinic, there are three groups of cases in which albuminuria is associated with diabetes: (1) albuminuria due to arteriosclerosis, with secondary lesions in the heart and the kidneys; (2) albuminuria of epithelial origin, due to an intercurrent disease, particularly tuberculosis, and (3) albuminuria without renal manifestation, alternating with glycosuria. In the first class of cases are frequently seen fat diabetic patients who have become albuminuriac at an age difficult to determine, on account of the insidious development of this condition and the carelessness of the patient in seeking medical advice. In these cases the albuminuria appears subsequent to the diabetes and at the same age, from 45 to 55 years, at which it appears in arteriosclerosis. The clinical features are: abundant pale urine of low specific gravity—from 1.010 to 1.020—nocturnal polyuria, and a moderate amount of albumin, with or without a slight edema. Death occurs from uremia rather than from glycosuria. In the second class of cases, tuberculosis is the most common cause of the albuminuria. Among other causes is suppuration of the bladder, which is relatively common in diabetic women, owing to the introduction of micro-organisms from without. The third class of cases are found among private rather than hospital patients, and are discovered only by accident. In these the albuminuria and glycosuria may be considered as two syndromes of similar origin; Dr. Hatziegan characterizes this association as "albuminurious diabetes" as first described by Lancereaux in France. This association is found particularly in obese and gouty patients.

The Feats of Medical Science

In an address held before the medical society at its opening session, the president, Dr. Conrad spoke on the accomplishments of medical science in relieving human suffering, as well as the numerous annoyances and drawbacks experienced by the profession in its beneficent work. He gave entertaining illustrations of some of these drawbacks: the wiles of quackery, the credulity of the public, the confusion of thrifty commercialism with ethical proprieties, the tendency to fads in the profession itself, together with the overdoing of certain methods, and the risk of falling into ruts and superficial contentment. Against all these, however, he balances the great achievements of the profession; the triumphs of surgery; the better knowledge of the origin of diseases and their treatment, and all advances tending to diminish human suffering and adding infinite possibilities of comfort and enjoyment in human existence.

According to Dr. Letanovsky, a Transylvanian surgeon, immobilization for vertebral and hip joint disease promotes the formation of bladder calculi. He has operated in twenty cases of this kind in the last five years, most of which occurred in children from 6 to 8 years old. One boy, aged 10, had to have the hip cast removed to allow suprapubic removal of a calculus. Lithiasis was suggested by incontinence day and night, frequent or interrupted micturition, hematuria, pain in the end of the penis, frequent erections, straining, and involuntary manipulation of the penis. These symptoms are rarely associated. The children's straining, in two cases, induced prolapse of the rectum, but this subsided after the removal of the bladder stone. If the child can urinate better reclining than erect, and not at all when lying prone, a calculus blocking the outlet is probable. Dr. Letanovsky urges the suprapubic incision rather than taking the chance of injuring the narrow passage by lithotrity in a child. Healing was perfect in seven of the fourteen cases in which he sutured the bladder at once.

Marriages

FRANCIS A. MALONE, Waterford, Wis., to Miss Gertrude DeKelver of Rochester, at Chippewa Falls, August 17.

LEONIDAS MCFERRIN DRAPER, Warrenton, N. C., to Miss Jeddie Mae Bristow of Raleigh, N. C., June 13.

LELAND FRANCIS HYSLOP, Blair, Wis., to Miss Cecelia Ann McAvoy of Kingston, Ont., Canada, June 4.

BEN SPAULDING HILL, Kenosha, Wis., to Miss Grace Marguerite Mattern of Mara, Pa., July 25.

EVANS HUGO WANGELIN, St. Louis, to Miss Wilma Friend of East St. Louis, Ill., June 25.

LEONARD LEE WELCH, Marietta, Ga., to Miss Mary Emman Nolen of Athens, Ala., June 10.

WALDO B. ISON, East St. Louis, Ill., to Miss Henrietta Weinzel of St. Louis, July 18.

ROGER B. BURRUS, Hickman, Ky., to Miss Ella B. Moynor of Nashville, Tenn., June 6.

EDWARD F. MIELKE, Appleton, Wis., to Miss Beulah Connell of Waukesha, August 18.

ETTA G. GRAY to Mr. Addison H. Ely, both of Los Angeles, recently.

Deaths

John Blasdel Shapleigh ✠ St. Louis; St. Louis Medical College, 1881; member of the American Otological Society; lecturer, diseases of the ear, 1886-1890, St. Louis Medical College; dean, 1901-1902, professor of otology, 1899-1912, clinical professor, 1912-1922 and since 1922 emeritus professor, Washington University School of Medicine; on the staffs of the Barnes, St. Louis Children's, and Barnard Free Skin and Cancer hospitals and St. Luke's Hospital, where he died, September 15, following an operation, aged 67.

Otis D. Stickney ✠ Atlantic City, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1902; member of the American Academy of Ophthalmology and Oto-Laryngology and the Philadelphia Laryngological Society; on the staff of the Atlantic City Hospital; aged 47; died, September 27, of injuries received in an automobile accident.

Harry Humfreville ✠ Waterville, Kan.; Kentucky School of Medicine, Louisville, 1875; formerly president of the Marshall County Medical Society; for forty years surgeon to the Missouri Pacific Railroad; at one time county health officer; aged 71; died, September 9, at the Grandview Sanitarium, Kansas City, following a long illness.

Hunter Samuel Woodbery ✠ De Land, Fla.; University of Virginia Department of Medicine, Charlottesville, 1911; president and formerly secretary of the Volusia County Medical Society; served in the M. C., U. S. Army, during the World War; at one time on the staff of De Land Memorial Hospital; aged 38; died in September, at Capitola.

James A. McLaughlin ✠ Minneapolis; McGill University Faculty of Medicine, Montreal, Que., Canada, 1894; served in the M. C., U. S. Army, with the rank of captain, during the World War; formerly on the staff of the City Hospital; aged 55; died, September 16, following a long illness.

Charles Harper Walworth, Oakland, Calif.; California Eclectic Medical College, Los Angeles, 1897; College of Physicians and Surgeons of San Francisco, 1901; on the staff of the Berkeley (Calif.) General Hospital; aged 60; was killed, July 19, in an automobile accident.

Patrick Walter H. McKeown, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1889; M.R.C.S., England, 1890; associate professor of clinical surgery, University of Toronto Faculty of Medicine; on the staff of St. Michael's Hospital; aged 59; died, September 4.

Emmett Starke Ballard, St. Joseph, Mo.; Bellevue Hospital Medical College, New York, 1898; member of the Missouri State Medical Association; formerly city physician and member of the board of education; aged 50; died, September 24, following a long illness.

Westerfield B. England, Mudlick, Ky.; University of Tennessee College of Medicine, Memphis, 1900; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1906; aged 50; died, September 18, at Waco, Texas.

George Melbourn Depew, Summer Shade, Ky.; Vanderbilt University Medical Department, Nashville, Tenn., 1893; for several years postmaster of Summer Shade; aged 64; died, September 20, of heart disease.

George B. Hoopingarner, Elkhart, Ind.; Medical College of Indiana, Indianapolis, 1882; Jefferson Medical College of Philadelphia, 1888; member of the Indiana State Medical Association; aged 66; died, September 19, of heart disease.

Spencer Marcus Rice ✠ Terre Haute, Ind.; State University of Iowa College of Medicine, Iowa City, 1879; formerly on the staff of St. Anthony's Hospital; aged 70; died, September 20, at Rochester, Minn., of cerebral hemorrhage.

Charles Thomas Ballantyne, Ottawa, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1900; on the staff of the Ottawa Civic Hospital; aged 49; died suddenly, June 10, of angina pectoris.

Julius I. Metzger, New York; Medical Department of Columbia College, New York, 1882; member of the Medical Society of the State of New York; aged 66; died, September 29.

Henry Boteler Gross, Jefferson, Md.; University of Maryland School of Medicine, Baltimore, 1871; for many years member of the board of education; aged 76; died, September 14.

Humphrey Swain, Goshen, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1866; Civil War veteran; aged 82; died, September 11, of cerebral hemorrhage.

Elmer E. Kelso, Mooresville, Ind.; Medical College of Indiana, Indianapolis, 1891; aged 62; died, September 22, at the Methodist Hospital, Indianapolis, following a long illness.

Carlisle Lamar Nottingham ✠ Cape Charles, Va.; Maryland Medical College, Baltimore, 1905; aged 41; died, September 18, at Saranac Lake, N. Y., of pulmonary tuberculosis.

Augustus R. Schaefer, Alexandria, Ind.; Eclectic Medical Institute, Cincinnati, 1881; aged 64; died, September 20, at a hospital in Logansport, following a long illness.

Henry S. Garfield, Pendleton, Ore.; Hahnemann Medical College of the Pacific, San Francisco, 1890; county coroner; aged 65; died, September 17, of heart disease.

William Leland Hughlett ✠ Cocoa, Fla.; Medical College of Virginia, Richmond, 1884; formerly a member of the state legislature; aged 63; died, September 18.

Sheppard Emmitt Brinson, Stillmore, Ga.; University of Georgia Medical Department, Augusta, 1885; aged 74; died, September 20, following a long illness.

Peter Stuart, Guelph, Ont., Canada; Detroit (Mich.) Medical College, 1881; L.F.P.S., Glasgow, 1883; aged 65; died, August 25, following a long illness.

John Burritt Mann, Peterboro, Ont., Canada; University of Toronto Faculty of Medicine, 1910; aged 40; died, September 25, of burns received in a fire.

Murdock Alexander Macaulay, Halifax, Nova Scotia, Canada; Dalhousie University Faculty of Medicine, Halifax, 1904; aged 61; died, August 9.

Thomas Walter Wiley, McKinney, Texas; Atlanta Medical College, 1859; Confederate veteran; aged 86; died, September 14, following a long illness.

Barnum L. Cleveland, Flint, Mich.; Cleveland University of Medicine and Surgery, 1870; aged 80; died, September 19, of carcinoma of the stomach.

James Walter Reynolds, Brundidge, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1885; died, September 21, of heart disease.

John Kelly Crawford ✠ Cooperstown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1868; aged 83; died in September.

Harvey Edward Scott, Battle Wharf, Ala.; Vanderbilt University Medical Department, Nashville, Tenn., 1880; aged 70; died September 2.

Samuel John Kirk, Macleod, Alta., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1898; aged 55; died, August 7.

William Jay McClintock, Waycross, Ga.; Washington University Medical School, St. Louis, 1902; aged 67; died, September 18.

James Robert Laing, Hamilton, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1917; aged 33; died recently.

James Ross Collie, River John, Nova Scotia, Canada; Medical School of Harvard University, Boston, 1869; aged 84; died, July 11.

Peter F. Gates ✠ Chicago; Harvey Medical College, Chicago, 1903; aged 64; died, August 1, of acute dilatation of the heart.

Henry W. Parchen, Phillips, Neb.; Northwestern Medical College, St. Joseph, Mo., 1882; died, August 27, following a long illness.

Thomas L. Keys, Rockwell, Texas; University of Louisville (Ky.) School of Medicine, 1885; aged 69; died in September.

William Wallace Wharton Courtney, Detroit; Detroit College of Medicine and Surgery, 1891; aged 64; died, September 19.

Patrick H. Swaim, Ridge Farm, Ill. (licensed, Illinois, 1882); aged 75; died, September 23, of cerebral hemorrhage.

Robert Emmett Bird, Rockport, Mo.; Medical College of Ohio, Cincinnati, 1879; aged 70; died, September 13.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

ORARGOL NOT ACCEPTABLE FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

Orargol (The Anglo-French Drug Co., New York) is stated to be a colloidal suspension of silver and gold prepared electrically from an alloy composed of gold, 10 per cent. and silver 90 per cent. Orargol is marketed in two forms: Orargol Injectable, containing colloidal gold and silver 0.05 per cent. and Orargol Noninjectable for external use and oral administration, containing colloidal gold and silver, 0.1 per cent.

ORARGOL
(A.F.D.)
An electrically prepared suspension of colloidal silver and gold for
RHINO-LARYNGOLOGY
AND
OPHTHALMOLOGY
AND GENERAL ANTISEPSIS
Indicated in the same diseases as colloidal silver, Orargol has a superior action because of the addition of the powerfully anti-infectious colloidal gold.
THE ANGLO-FRENCH DRUG CO.
120 Broadway, N. Y. C.
Please send sample package of Orargol as illustrated.
Name
Address
City

In advertising it is claimed that silver and gold are "the most active antiseptics of all the colloidal metals used against infectious conditions." It is claimed:

"Indicated in the same diseases as colloidal silver, Orargol has a superior action because of the addition of the powerfully anti-infectious colloidal gold, also for the reason that the particles of both metals are in a state of much finer sub-division—and therefore, more active—than can be obtained by chemical means."

No evidence of any kind was submitted to show that this mixture has the antiseptic action attributed to it, or to substantiate the claim that the metals in Orargol are more finely divided than can be obtained by chemical means. If the antiseptic activity of Orargol is due to the ionized metals, as is probable, a finer grain of the colloids would not necessarily insure high activity. In fact, the preparation has a slightly astringent action on the nasal mucosa, indicating the presence of ionized metal although the information furnished by the Anglo-French Drug Company implies that the metals are present only in colloidal form. These claims must be considered unwarranted until they are supported by acceptable evidence.

No evidence was presented to the Council for the claim that Orargol has a superior action over colloidal silver preparations because of the presence of the gold. Until this claim is established, the combination of silver and gold in one mixture must be considered irrational.

On the basis of the available evidence, the Council declared Orargol inadmissible to New and Nonofficial Remedies because the claims made for it are unwarranted and because it is an unscientific mixture.

RAYMINOL NOT ACCEPTABLE FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

Rayminol (Doyle), according to its proprietors, the Phairmount Laboratories of Hackensack, N. J., provides a marked advance in "catalytic therapy." The preparation is offered to physicians "as a worthy member of your armamentarium" and "with the profoundest respect of your trust—and a deep admiration of your ethical selectiveness."

According to the label, Rayminol is "an inimitable composition founded upon exhaustive research," and is stated to be "a scientific union of liquid petrolatum, aromatized rhubarb and phenolphthalein (0.03 gm. to each 4.0) pancreatized." The term "pancreatized" is explained in the firm's advertising by the claim that Rayminol contains "an extract of the entire pancreas Gland containing all of the constituents of the gland; exhibiting great potency in respect to the Enzymes, Trypsin, Amylopsin, Lipase . . ." The amount of this extract or its potency is not declared. From these statements it appears that Rayminol is claimed to be a preparation containing liquid petrolatum, phenolphthalein, a preparation of rhubarb, and a pancreatic preparation, all in undeclared amounts except the phenolphthalein, which appears to be present in the proportion of 0.03 gm. per 4 c.c. (one-half grain per fluidrachm).

According to the label on the trade package, Rayminol is "a perfect internal cleanser—lubricant and intestinal digestive, especially indicated in the various stages of constipation." The following also appears on the label:

"Rayminol (Doyle) is peculiarly suitable for intestinal therapy—it will control fermentative and putrefactive changes in the intestines and thus prevent the constitutional absorption of the products of such changes—assists in intestinal digestion generally and subdues catarrhal and inflammatory processes affecting the liver and bile tract.

"Rayminol is one of the most efficient and complete products for constipation, or rather autointoxication which constipation causes—affecting the brain, nervous and muscular systems with fermented poisons and wastes—the underlying cause of many a case of 'blues'—nervous depression—despondency—'too tired to think' feeling—biliousness—headache, some forms of indigestion, stomach trouble and gastritis."

It is not true that Rayminol is a perfect intestinal digestive or internal cleanser (whatever that may be taken to mean), or that it is especially indicated in all cases of constipation. The broad claim that Rayminol subdues catarrhal and inflammatory processes affecting the liver and bile tract is obviously false. The routine administration of a pancreatin preparation in the treatment of constipation is irrational. The mixture is especially objectionable in that the dose (one to four teaspoonfuls twice a day) contains from one to four grains of phenolphthalein: four grains of phenolphthalein a day is excessive for routine use.

Rayminol is unacceptable for New and Nonofficial Remedies because it is a complex, irrational mixture of indefinite composition, which is marketed under a nondescriptive name with unwarranted therapeutic claims and in a manner that fosters the ill-advised use of purgatives by the public.

Accidents at Coal Mines.—One hundred and ninety-five lives were lost in coal mine accidents in August in the United States, according to the Department of Commerce. The fatality rate was 3.63 per million tons of coal mined, a reduction of 11 per cent. from the fatality rate of August of last year. Ten men were killed at Wilkes-Barre, August 3, in an explosion. There were forty-six fatalities at anthracite mines in Pennsylvania and 149 in bituminous mines throughout the country. For the first eight months of this year there were 1,461 fatalities at mines, and for the same period last year 1,661. The fatality rate for this period is 3.83 per million tons of coal mined while for last year in the same period it was 4.57 per million tons of coal mined, a reduction of 16 per cent. Ten major disasters with a total loss of 198 lives occurred during the first eight months of 1925 and seven major disasters with a total loss of 408 lives in the corresponding period last year.

Correspondence

MEDICAL SHORT STORY WRITERS

To the Editor:—I am interested in compiling a collection of short stories written by physicians. As many of these stories are published under assumed names, or the medical degree of the author is omitted, it is difficult to locate them. I am therefore writing to ask that if you or your readers know of any short stories published by medical men you will kindly communicate the fact to me.

HAROLD HAYS, M.D.,
22 West Seventy-Fourth Street,
New York.

CANCER HEREDITY

To the Editor:—I am quoting from the remarks of Dr. F. C. Wood of New York (THE JOURNAL, October 3, p. 1050) on the subject of cancer heredity: "Of course, the animal experimentation done by Maud Slye in Chicago and by Bullock and Curtis in my laboratory have definitely proved that in animals a susceptibility to cancer is transmissible. Of that there is no question. The breeding experiments, however, are so complicated and take so long that if they were applied to human beings *it would mean that for the last 5,000 years both parents of these unfortunate human beings would have had to have cancer.* That is a concentration of breeding which cannot occur in the human race. So the facts of the high incidence of cancer in these experimental studies cannot be applied in full value to human beings."

Exactly what Dr. Wood meant in the portion that I have italicized is not clear, but there is no meaning which these words could possibly have which in any way represents the scientific facts.

The 100 per cent. cancer strains that have been produced in any laboratory have been produced from a double cancerous parentage somewhere in the line. But this does not mean that there must have been a series of double parentage for any length of time corresponding to anything like 5,000 years of human heredity, or even for more than one generation. Double cancerous parentage for one generation only will produce 100 per cent. cancerous offspring, exactly as double albino parentage for one generation only will produce 100 per cent. albino offspring.

The long series of many generations of 100 per cent. cancer have been charted, not because countless generations were necessary to produce them, but to demonstrate that they actually *were* 100 per cent. cancer strains and continued so for as many generations as we continued a double cancerous parentage. It is not alone these strains of double cancerous parentage which prove the inheritability of cancer, but still more potent in this proof is the behavior of cancer in hybridization.

Only two generations of exact facts are necessary to demonstrate what this behavior is where the cross is between a cancerous individual and a noncancerous individual who is not a cancer carrier. Three generations of exact facts—not of double cancerous parentage—are necessary to determine how cancer behaves in heredity when a hybrid carrier is mated with a cancerous individual, or with a noncancerous individual that is not a cancer carrier. This is true in mice, in man or in any other animal, or in any plant.

This demonstration of the behavior of the cancer tendency in hybridization has been shown in many charts published from this laboratory for the last fifteen years.

It is the behavior of any character in hybridization which indisputably proves its inheritability, since only heredity could explain the segregating out and the transmission as such of a character unchanged, when the two parents are unlike in any given character, as they must be in a true hybridization.

The difficulty in studying human heredity is not that we cannot have double cancerous parentage, or any other type of double parentage for 5,000 years, but that we cannot get the exact facts for even one generation. It is because of this lack of exact facts and because we cannot experiment on human beings in this and many other lines that we must get our exact facts from animal experimentation.

That we are justified in applying these facts, where they are basic biologic facts, is one of the best assets derived from the discovery of the fact of evolution.

MAUD SLYE, Chicago.

Cancer Laboratory, Otho S. A. Sprague Memorial Institute, University of Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MERCUROCHROME — SUCTION APPARATUS — DIET AND SIZE OF CHILD

To the Editor:—1. Is there danger of poisoning from mercurochrome-220 in the hands of the laity? 2. Is there any other suction apparatus than Sorensen's on the market for use in tonsil work, etc.? 3. A woman went to a city hospital to be confined and was delivered of a 6½ pound baby. It was said that the baby was small because of prescribed diet. Can the baby's weight be effectually controlled; if so, by what diet list? Does the underfed, small baby have as good a start in life as the larger, well nourished one? We have read of undernourished mothers in famine stricken countries and during war times bearing rickety and marantic children. What is the difference?

J. G. WALKER, M.D., Attica, Kan.

ANSWER.—1. Since mercurochrome-220 soluble contains from 23 to 25 per cent. of mercury, there would seem to be a possible danger that it might decompose to liberate this drug in its ionic (potent, poisonous) form. However, sufficient evidence has been published by Drs. Young, Scott and Hill (*J. Urol.* **12**:237 [Sept.] 1924) to show that mercurochrome causes little or no gastro-intestinal disturbance until it has been taken in large doses for a week or more. They definitely conclude that it is nonpoisonous, after having administered it to patients in doses of from 0.9 to 1.2 gm. daily for as many as ten days at a time. In New and Nonofficial Remedies, 1925, page 232, it is stated that no systemic effects have been observed following the local application of mercurochrome in man. These considerations, together with the additional fact that the preparation sold to the public is marketed only in small packages of solution, would seem to make the use of mercurochrome by the laity no more dangerous than that of tincture of iodin.

2. Suction and pressure machines are offered by the following firms:

V. Mueller & Co., 408 South Honore Street, Chicago: the "Beck-Mueller."
Jaeckh Manufacturing Company, 422 East Sixth Street, Cincinnati: the Robertson anesthesia, suction and pressure cabinet.
Toledo Technical Appliance Company, 2226 Ashland Avenue, Toledo, Ohio: the McKesson apparatus.
J. Sklar Manufacturing Company, 133 Floyd Street, Brooklyn: the Sklar E. N. T. specialist's outfit.
The Mim Company, 632 Woodward Building, Washington, D. C., makes suction tubes for tonsillectomy.

3. The matter of influencing the weight and size of the new-born child by means of diet seems to be of continual interest, since queries regarding it have already been answered in the columns of THE JOURNAL on two occasions, Nov. 16, 1916, and March 2, 1918. For many centuries the notion has been prevalent that if the women eat gluttonously during pregnancy and do not take much exercise, the children will be overdeveloped and difficult deliveries will result. As laziness in the latter weeks is likely to postpone the birth, overgrowth of the child from prolonged pregnancy would add to the dystocia. While no one has made any scientific study of this particular aspect of the matter, experience seems to point to the truth of the notion. On the other

hand, experience and scientific research seem to prove conclusively that it is impossible to influence the size and weight of the new-born child by any special diet during pregnancy excepting by actual starvation. In this event, abortion and premature labor are more common.

In 1889, Prochownik recommended a diet poor in carbohydrates and water for the last six weeks of pregnancy with the single purpose of reducing the fat of the child and stated that in three cases he had facilitated labor in contracted pelves. A few American authors believe in this diet, but the majority do not. English and French writers mostly are silent on the subject. Among the Germans, Bumm, Jaschke and Pankov and Stoeckel give no value to it and quote the great experiment of the hunger blockade during the war in confirmation.

Bumm says that during the hunger blockade the children were born "fat and rosy." Stoeckel says that on the war ration the women bore larger children than usual. Eisenreich said that, during the war, babies were not smaller than before and quotes Bruening to substantiate his statement.

One American author, after describing Prochownik's diet, says that his "few experiences with it have been absolutely negative, and, indeed, daily observation in other cases, for example, tuberculosis, carcinoma, hyperemesis gravidarum and diabetes, show that the nutrition of the mother has little effect on the growth of the child, which is in fact a parasite." Dr. Hugo Ehrenfest of St. Louis gave this subject a critical study in 1919, and those interested should consult his paper. He comes to the conclusion expressed above and shows that the child is a parasite on the mother, forcing precedence for its own nourishment at her expense. He quotes the studies of numerous physiologists which do not justify the assumption that there is increased nutrition of the fetus in the presence of increased nutritive material. The size of the child is dependent on the length of the pregnancy, endocrinal balance, heredity and constitution and, it might be added, the state of health of the endometrium and placenta. Ehrenfest concludes that the preponderance of the evidence, both clinical and laboratory, proves that restriction of diet short of absolute starvation has no effect on the size of the child. An obstetrician in a clinic in which two attending men are committed to dieting and sweating pregnant women states that babies delivered by him live alongside the others. After many years of observation, he declares that there is no appreciable difference in size, in weight or in vitality.

ASTHMOLYSIN

To the Editor:—I am enclosing a card relative to asthmolysin. May I suggest that you put a notice in THE JOURNAL about this German proprietary?

O. B. FOSSUM, M.D., San Luis Obispo, Calif.

ANSWER.—From German pharmaceutic and chemical journals it appears that asthmolysin has been on the market for at least ten years.

According to the advertising, asthmolysin is "a combination of the suprarenal and pituitary hormones in distinct proportions" which is prepared by a "special method."

In the series of articles on glandular therapy, published under the auspices of the Council on Pharmacy and Chemistry, Dr. Joseph L. Miller states (THE JOURNAL, Nov. 29, 1924, p. 1769) that the use of pituitary in bronchial asthma is contraindicated.

FREEZING OF BIOLOGIC PREPARATIONS

To the Editor:—Kindly advise whether freezing is detrimental to what good there may be in: (1) mixed cold vaccines; (2) canine rabies vaccine (single dose); (3) pollen extract; (4) typhoid serum for immunization; (5) insulin, and (6) the serums and vaccines in general. Some druggists are using iceless refrigeration, which brings the temperature down low enough to freeze these articles solid. Please omit my name.

M.D., Cleveland.

ANSWER.—There is no indication in the present knowledge that freezing interferes seriously, if at all, with the antigenic or immunizing properties of vaccines and pollen extracts, provided the temperature is fairly constant and the products in question are not frozen and thawed repeatedly over a considerable period. In the case of diphtheria toxin-antitoxin, the question of the effects of freezing has not been settled finally; but, as it is possible that freezing may reduce the antitoxic power of diphtheria antitoxin, it is now recommended that mixtures containing the minimum practical amount of toxin (one-tenth L+ dose in an injection) be used (E. R. Kelly, G. W. McCoy and others, THE JOURNAL, Feb. 16, 1924, p. 567). It follows that possibly freezing may reduce antitoxic or anti-infectious properties of other serums, and probably it is most desirable to keep serums and vaccines at a temperature a little above freezing.

We do not know of any "typhoid serum" for immunization. Vaccines composed of killed bacilli are used for that purpose.

There does not seem to be anything known concerning the effects of freezing on insulin.

YELLOW FEVER COMMISSION — TYPHOID FEVER IN AMERICAN EXPEDITIONARY FORCES

To the Editor:—Kindly tell me: 1. Who were the four members of the commission of the United States Army Medical Department who went to Cuba in 1900 to prove the mosquito theory of the transmission of yellow fever, and which one of these men deliberately allowed himself to be bitten by an infected mosquito and died of the disease? 2. How many members of the A. E. F. contracted typhoid fever, and how many died of the disease?

MRS. WALTER M. BRIGGS, Bowling Green, Ky.

ANSWER.—1. The U. S. Army medical officers composing the Yellow Fever Commission were Drs. Walter Reed, James Carroll, Jesse W. Lazear and Aristides Agramonte. Dr. Carroll contracted yellow fever experimentally and recovered; Dr. Lazear was bitten by an infected mosquito experimentally and did not contract the disease; later, however, he was bitten accidentally by a mosquito in the yellow fever ward and contracted the disease and died.

2. In the Surgeon General's report for the year 1919, page 47, is this statement: "With the same admission rates for typhoid fever in 1917-1918 as in 1861-1862, there would have been 226,001 cases and 62,694 deaths; as it was, there were 1,083 cases and 158 deaths."

ARGYRIA — TWILIGHT SLEEP

To the Editor:—1. Is there any possible danger of argyria from repeated application of argyrol to mucous surfaces? I have in mind especially a patient who is frequently troubled by an irritating conjunctivitis after exposure to dust. The usual washes have no effect, but instillation of a drop of 25 per cent. argyrol in each eye gives immediate relief. This is done sometimes twice a week, sometimes once in two and four weeks. 2. Are there any figures available as to the present general use of twilight sleep in obstetrics, and its effect, if any, on maternal and neonatal mortality?

M.D., Ill.

ANSWER.—1. Following is a list of references to cases of argyria following the use of silver preparations:

Myers, C. N.: Argyria and Its Relation to Silver Therapy: I. Argyria —Historical; II. Retention and Elimination of Silver with Special Reference to Silver Salvarsan and Silver Therapy, *Am. J. Syph.* **7**: 125 (Jan.) 1923.

Olson, G. M.: Argyria Localis Due to Organic Silver Preparations, THE JOURNAL, July 14, 1917, p. 87.

Crispin, A. M.: Argyrism Following Use of Collargol, THE JOURNAL, May 2, 1914, p. 1394.

Jones, M.: Argyrosis: Two Cases Accompanying Chronic Sinusitis, *Laryngoscope* **35**: 38 (Jan.) 1925.

Davis, T. D.: Argyria, with Report of Two Cases Due to Argyrol, *Virginia M. Month.* **51**: 154 (June) 1924.

Firth, D., and Harrison, G. A.: Case of Argyria, *Brit. J. Dermat.* **36**: 105 (March) 1924.

2. A complete discussion on the present status of scopolamin-morphin amnesia in obstetrics may be found in De Lee's "Principles and Practice of Obstetrics," page 314.

MERCURIC CHLORID — TOBACCO

To the Editor:—1. Is the use of a 1: 4,000 mercuric chlorid solution as a vaginal douche in leukorrhea, at intervals of several days, injurious? 2. If an asthma patient shows a negative skin reaction to tobacco, is it safe to conclude that its use, even if excessive, is without effect on his disease?

M.D.

ANSWER.—1. A 1: 4,000 mercuric chlorid solution may, if repeated sufficiently often, cause mercurial poisoning from cumulative absorption of the mercury precipitated on the mucous membrane. For this reason, a less toxic antiseptic is preferable.

2. No. Excessive use of tobacco acts as an irritant to the respiratory mucous membrane, and may aggravate the bronchitis accompanying asthma.

THE AUDITION DEVICE FOR HEARING

To the Editor:—Will you kindly inform me of the status of the devices made by the Audition Corporation, Wilson Building, Hoboken, N. J.?

C. C. BUNCH, Iowa City.

ANSWER.—The Audition device is made apparently for the purpose of producing noises and vibrations. The otologists who have given it a thorough trial believe that it may be of some value to persons who hear better in a noisy place, but even in such instances the response is beneficial only for a few hours.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 19. Sec., Dr. H. W. Loeb, 1402 South Grand Blvd., St. Louis, Mo.

ARKANSAS: Little Rock, Nov. 10-11. Sec., Reg. Bd., Dr. J. W. Walker, Fayetteville.

CALIFORNIA: Sacramento, Oct. 19-22. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

CONNECTICUT: New Haven, Nov. 10. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford; Sec., Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

MAINE: Portland, Nov. 10-11. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 10-12. Sec., Dr. Frank M. Vaughan, 144 State House, Boston.

MISSOURI: Kansas City, Oct. 27-30. Sec., Dr. James Stewart, Jefferson City.

NEVADA: Carson City, Nov. 2. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 20-21. Sec., Dr. Alex. Macalister, Trenton Trust Bldg., Trenton.

PHILIPPINE ISLANDS: Manila, Nov. 10. Sec., Dr. Jose V. Glaria, 686 Rizal Ave., Manila.

SOUTH CAROLINA: Columbia, Nov. 10. Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

Connecticut July Reciprocity Report

Dr. Robert L. Rowley, secretary of the Connecticut Medical Examining Board, reports that 25 candidates were licensed by reciprocity and one candidate was licensed by endorsement of credentials at the special meeting held at Hartford, July 31, 1925. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago		(1910)	Wisconsin
Rush Medical College		(1924)	Illinois
Johns Hopkins University		(1921)	Maryland
Boston University		(1923)	Mass.
Harvard University		(1910, 2)	Maine, Massachusetts, (1923) Michigan
Tufts College Medical School		(1906), (1913), (1924) (1922)	Mass. Rhode Island
Washington University		(1922)	Missouri
Columbia University		(1906),	(1920) New York
Cornell University		(1911),	(1919), (1922) New York
New York University Medical College		(1891)	Virginia
Syracuse University		(1908)	New York
Temple University		(1917)	Penna.
Woman's Medical College of Pennsylvania		(1901)	Penna.
University of Vermont		(1921)	Massachusetts, (1924) Vermont
McGill University		(1919)	Michigan
Comenian University, Czechoslovakia		(1915)*	Maine

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Harvard University		(1923)	N. B. M. Ex.

* Graduation not verified by American Medical Association.

Colorado July Examination

Dr. David A. Strickler, secretary, Colorado Board of Medical Examiners reports the written examination held at Denver, July 7, 1925. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 41 candidates who took the physicians' and surgeons' examination, 34, including one osteopath, passed, and 7, including one osteopath and one undergraduate, failed. Fourteen candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Colorado School of Medicine		(1923)	76.8, 79.5, 81.2, 82.1, 82.3, 83.2, 83.5, 84.1, 84.6, 85.7, 85.9, 86.3, 86.7, 87, 87.6, 87.6, 87.8, 88.4, 88.6, 88.6, 88.7, 88.8, 89.3, 90.2, 91, 92.9
Kansas City College of Medicine and Surgery		(1925)	75
Kansas City University of Phys. and Surgs.		(1925)	77.6, 83.8, 84.4
St. Louis College of Phys. and Surgs.		(1921) 75.8, (1925)	82.5
Washington University College of Medicine		(1922)	87.3
Osteopath			80.7

College	FAILED	Year Grad.	Per Cent.
Kansas City College of Med. and Surg.		(1923) 43.3, (1924)	68.5
Kansas City University of Phys. and Surgs.		(1924)	65.5
St. Louis College of Physicians and Surgeons		(1925)	64.5
University of West Tennessee, Coll. of Med. and Surg.		(1921)	67.2
Undergraduate			68.1
Osteopath			57.3

College	LICENSED BY RECIPROCITY	Grad. Year	with Reciprocity
University of Arkansas Medical Department		(1916)	Arkansas
Loyola University School of Medicine		(1920)	Illinois
Northwestern University Medical School		(1923)	Illinois
Iowa College of Physicians and Surgeons		(1898)	Iowa
Keokuk Medical College		(1911)	Oklahoma
University of Kansas School of Medicine		(1912)	Kansas
Johns Hopkins University Medical Department		(1922)	Maryland
Kansas City Medical College		(1901)	Missouri
Barnes Medical College		(1908)	Illinois
Creighton Medical College		(1924)	Nebraska
Albany Medical College		(1922)	New York
University of Oklahoma School of Medicine		(1915)	Utah
Memphis Hospital Medical School		(1911)	Alabama
University of Jurjev, Russia		(1899)*	Connecticut

* Graduation not verified by American Medical Association.

Book Notices

THE ACTION AND USES IN MEDICINE OF DIGITALIS AND ITS ALLIES. By Arthur R. Cushny, M.A., M.D., LL.D., Professor of Pharmacology in the University of Edinburgh. Cloth. Price, $6. Pp. 303, with 76 illustrations. New York: Longmans, Green & Co., 1925.

Cushny has performed a difficult task with consummate skill and, as he says, no essential paper has escaped attention. This may surprise some whose prolific writings have contributed nothing of permanent value to the subject. The pharmacologist will find an excellent analysis of previous work, and the clinician will find that the conclusions reached are set forth in simple terms. On the other hand, few will find all parts of the monograph of equal interest and some will prefer to omit the first four chapters, which deal mainly with the general characters of members of the digitalis group and their action on the frog's heart. These details are complex, and Cushny says (p. 70) that the subject lacks practical therapeutic interest. A brief summary of the action of digitalis on the frog's heart is given on page 77. The chapter that deals with the action on the mammalian heart is less difficult, fortunately, for an understanding of this is essential for the therapeutic use of digitalis bodies. Few details of this monograph can receive consideration in a short review such as this, but attention may be directed to Cushny's explanation (p. 131) of the periodic variation in the systolic and diastolic excursions of the auricles and ventricles so often observed in the laboratory. The sixth chapter deals with blood pressure and vascular action, and it is to be hoped that Cushny has given a quietus to a pernicious view that long dominated many minds with reference to the supposed danger of using digitalis in the presence of high blood pressure. Another fallacy, as widely held at one time, but of less importance, concerns the use of digitalis in aortic insufficiency. Cushny says that while digitalis is often useless in this condition, because such patients do not present themselves for treatment until the damage has become irreparable, the slight increase in the regurgitation due to the slowing induced is of minor importance and may be more than compensated for by the increased output of the heart due to digitalis. The seventh and eighth chapters treat of the action on various organs and tissues and the problems of absorption, distribution, elimination and cumulation. The latter subject is no longer the bugbear of digitalis therapy that it was for many years, and Cushny calls attention to the fact that this persistence and summation of action are an advantage whereby a smooth therapeutic stage may be attained without danger to the patient.

The author states (p. 209) that in no department of medicine have the results following animal experimentation been more quickly applied in the explanation of therapeutic experiences and theories, and that after the physiologic doctrines of Gaskell began to be applied to clinical problems, and the study of function had obtained greater recognition, more progress was made in the therapeutic use of digitalis in fifteen years than had been made in the previous century. Attention is called to the undue emphasis that has been placed on the slowing of the heart, though slowing is often absent when digitalis proves beneficial. The author explains clearly why the high initial dosage that Eggleston has recommended is entirely safe when one observes the precautions that are especially enjoined. The author adopts a cautious attitude toward the routine use of digitalis in pneumonia and holds that the evidence does not justify its use until cardiac symptoms indicate it. He does not recommend it in hemorrhage and shock. He does not discuss the use of digitalis preliminary to surgical operations, probably because no satis-

factory evidence is afforded by work that has been done in that field. The value of the assay of these drugs as well as its limitation is recognized by Cushny, and his argument in its favor will convince any skeptic, unless he is one of those that will find it equally incomprehensible whether the amount of active principle is expressed in milligrams or in frog units.

It is especially desirable that those who believe the difficulties and disappointments that follow the use of official preparations of digitalis may be avoided by the use of one of the proprietary substitutes advertised with extravagant claims should read what Cushny has to say. Concerning such articles, he says (p. 263), "Much less are the preparations available for therapeutic purposes to be regarded as pure substances or as incorporating the whole virtues of digitalis. This would be of less moment if these so-called digitalines, digitoxins, gitalins and digalens were reliable in strength; unfortunately, it has not yet been proved possible even for the same manufacturer working by the same method to put a uniform product on the market. And the more elaborate the method, the more do different samples of the final product seem to vary in strength. The 'pure principles' of digitalis on the market are to be regarded with distrust and to be prescribed with care." With especial reference to the fear of cumulation, he says, "Any digitalis preparation that is not cumulative and that does not produce nausea is inert and so weak that it is valueless. Cumulation and emesis are the essence of the digitalis action and can no more be eliminated than the spots on the leopard's skin—none of them is superior to a carefully standardized pharmacopeial preparation and all are sold at extravagant prices. In some instances the strength has been found to vary widely and this is a source of danger."

The bibliography of about 600 references is valuable because of the quality of the papers rather than because of the number of the references. There is an index showing the pages of the book where each paper is considered. Cushny states that most of those who have compared the chief drugs of the group revert to digitalis, but it is astonishing that he does not take a more positive stand with reference to the preeminence of digitalis among the drugs of this group for oral administration. Cushny has performed a great service to pharmacologists and practitioners, and the book deserves careful reading.

A PRELIMINARY REPORT ON THE TREATMENT OF INTERSTITIAL KERATITIS. By R. Lindsay Rea, M.D., F.R.C.S., Ophthalmic Surgeon to West End Hospital for Nervous Diseases. Cloth. Price, 2 shillings 6 pence net. Pp. 32, with illustrations. London: H. K. Lewis & Co., 1925.

This report is based on ninety-one cases seen by the author in the various English hospitals over a period of several years. In this series he found the proportion of males to females to be in relation of 1 to 1.87 and the ages to vary from 5 to 49 years. Sixty-four of the seventy-two cases that were examined serologically gave a positive Wassermann reaction and five of the eight negative cases gave a positive colloidal gold test. The etiology was not discussed in the remainder of the cases of the series. The author did not find a single case in which it might be suggested that tuberculosis was the cause, contrary to the findings in other series of cases numerically greater. Local treatment consisted in the use of atropin ointment and, if the eye was not unduly irritated, 2 per cent. yellow mercuric oxid ointment. The local British product was mentioned specifically. Neoarsphenamin was used intravenously, an initial dosage of 0.12 gm. being increased a small amount each week for from ten to twelve weeks. Mercury was then prescribed, to be continued for about one year and in some of the older cases accompanied by iodid. In other words, the treatment advocated was the usual mild routine antisyphilitic treatment. The results were compared in terms of ultimate vision, the treated cases being compared with the untreated. The reports of the treated cases were extremely meager, as the vision was reported in only fourteen of the forty-seven cases. Without analyzing his figures, the author states that "comparison of these tables shows that the best results are obtained . . . by constitutional treatment." It is a nice booklet but unnecessary, for it does not add a thing to what is already commonly known.

LES RAYONS ULTRA-VIOLETS ET ASSOCIÉS EN THÉRAPEUTIQUE. Par Jean Saidman. Paper. Price, 65 francs. Pp. 580, with 194 illustrations. Paris: Gaston Doin, 1925.

Heretofore, information concerning the nature and action of ultraviolet rays and their therapeutic application has been scattered through various periodicals. This and the commercial propaganda carried on by manufacturers of ultraviolet apparatus have created a chaotic impression in the minds of physicians generally. In preparing this book, Dr. Saidman has sought to reestablish order by making information available, concerning not only the physical and photochemical characteristics of ultraviolet rays, but also their physiologic effects and their application to the treatment of disease. The book is divided into three parts, the first part dealing with the sources of ultraviolet rays; the second, with their physiologic action, and the third, with their therapeutic application. In the first part the author discusses the emission of ultraviolet rays by different substances, including the metals, the natural sources, and the various artificial sources. In discussing the latter, he gives a good account of the physical and other differences between the ultraviolet characteristics of the carbon arc lamp, as developed by Finsen, and of the mercury vapor lamp, including their advantages and disadvantages. This information is valuable, because it enables the reader to understand something of the controversy that has raged on this point. Reflectors, localizers, compressors and filters are likewise considered. There is an interesting chapter on the choice of a lamp, in which sound advice is given. The author warns that no reliance is to be placed on the claims of manufacturers, and that the choice must be based on the wave-length characteristics and on their adaptability to the effects desired. In the second part, the absorption of ultraviolet rays by air, by albumin and by tissues is discussed, as well as the photoelectric and chemical effects and the action of ultraviolet rays on bacteria. There is a chapter on the action of the ultraviolet rays on the skin, in which are described the various phases of actinic epidermitis, its symptoms and evolution, the effect of the actinic erythema on the general condition, the factors influencing the intensity of such erythema, and the influence of the erythema itself on the resistance of the skin. Separate sections are devoted to pigmentation, sensitization, and action on the blood, on the nervous system, on the eye, and on the deeper structures and organs. The third part is devoted to the technic of ultraviolet irradiation, both local and general; the instrumentation most suitable; the frequency of treatment; the measurement of ultraviolet rays; possible complications, and, finally, to a discussion of the different pathologic conditions in which ultraviolet rays are supposed to be useful. In criticism, it may be said that in the first chapter the nature of ultraviolet rays could have been described and explained more fully. Altogether, however, the book is a satisfactory one. The arrangement of the subject matter is logical. The experimental and clinical data are reviewed, and the author's opinions and conclusions, which are set off in italics, are clear. The book is well printed, well indexed, and contains a complete bibliography on the subject up to 1924. It constitutes a reliable work of reference for the research worker and for the physician who appreciates finding in such a work all the information available on the subject.

DIE INDIVIDUALITÄT DES BLUTES IN DER BIOLOGIE, IN DER KLINIK UND IN DER GERICHTLICHEN MEDIZIN. Von Dr. Leone Lattes, Professor an der Universität Modena. Paper. Price, 9.60 marks. Pp. 226, with 48 illustrations. Berlin: Julius Springer, 1925.

The first issue of this book in Italian appeared in 1923 and was received favorably. In the present edition the material has been revised and brought down to date; autoagglutination, complement binding iso-antibodies, the question of new iso-agglutinins, the heredity and the anthropologic significance of the blood groups are given expanded consideration. The references to the literature, which appear to be as complete as could well be expected, now number 700 in all, and especial pains have been taken to make them complete and correct. Blood groupage (isohemagglutination) is of interest in biology, anthropology, heredity and medicine, particularly surgery and medical jurisprudence, and the

pertinent literature is scattered in periodicals representing all these departments of science. Lattes' book is the most comprehensive and the most satisfactory book on blood grouping. All the phases of the subject are presented thoroughly; a special chapter is given to the medicolegal use of blood grouping, and in an appendix to this chapter the translator, Fritz Schiff, discusses the method followed in Germany, which at present appears to be the only country in which the diagnosis of blood groups is used to throw light on questions of parentage, the individual source of blood spots, and similar problems for forensic purposes. The American work is given adequate consideration; the joint recommendation of the committee representing the American Association of Immunologists, the Society of American Bacteriologists, and the Association of Pathologists and Bacteriologists that the Jansky classification be adopted for universal use is cited with approval. The fact that in some places, as for instance the Mayo Clinic, a different scheme of classification is used is deprecated because it leads to difficulty in comparing the results of different workers and to misunderstanding in teaching and pratice.

ALLGEMEINE PATHOLOGIE. Von Dr. N. Ph. Tendeloo, Direktor des pathologischen Instituts der Reichuniversität Leiden. Second edition. Paper. Price, 66 marks. Pp. 1040, with 368 illustrations. Berlin: Julius Springer, 1925.

The training of the author for his task consists in part in service as assistant in pathologic anatomy followed by actual medical practice for eight years, when he became prosector and bacteriologist to the city hospital in Rotterdam and then professor in Leiden. The first edition of the work appeared in 1918 and before long demand arose for a new edition, which is now at hand. There are four parts: the first deals with general questions and conceptions, such as what is normal and abnormal, life and death, correlation and adaptation; the second part takes up general etiology and pathogenesis; the third part is devoted to local disturbances of nutrition, metabolism and function (hypertrophy, atrophy, degeneration, infiltration, inflammation, tumors); and the fourth part deals with general disturbances of nutrition, metabolism and function, and contains twelve chapters covering nearly 500 pages. This mere enumeration indicates the largeness of the scope of Tendeloo's General Pathology. The discussion is detailed, sound and scholarly, with possibly some tendency to diffuseness. The command of the literature seems remarkable and the list of the names of the authors cited in the text covers no less than twenty pages with three columns on each page; in addition, the most important basic works for each chapter are cited separately. The book will be a valuable and useful addition to the pathologic section of every medical library.

DIABETES, ITS TREATMENT BY INSULIN AND DIET. A Handbook for the Patient. By Orlando H. Petty, A.M., M.D., F.A.C.P., Professor of Diseases of Metabolism, Graduate School of Medicine, University of Pennsylvania, and William H. Stoner, A.M., M.D., F.A.C.P., Associate Professor of Biochemistry, Graduate School of Medicine, University of Pennsylvania. Second edition. Cloth. Price, $1.50. Pp. 133, with illustrations. Philadelphia: F. A. Davis Company, 1925.

Some good handbooks on diabetes have appeared recently; some have been insignificant. This one is both good and significant. The authors evidently give credit to the diabetic patient for having that understanding without which no handbook is of use. As a result the text, though plainly written, is real; the tables are decidedly helpful, and the recipes reliable.

SCHLAFMITTEL-THERAPIE. Von Dr. Albrecht Renner, Städtisches Krankenhaus Altona. Paper. Price, 4,50 marks. Pp. 125. Berlin: Julius Springer, 1925.

Modern chemical industry has almost hopelessly swamped the physician with a superabundance of hypnotics. To obtain the best effect from these agents, three factors have to be considered: the nature of the sleep disturbance, the nature of the diseased organism, and the nature of the hypnotic. A perusal of this scholarly treatise should enable the physician to fit the remedy to the case with as great a degree of scientific precision as our present knowledge permits.

Miscellany

MEMENTOES OF LAVOISIER

Notes on a Trip to Château de la Canière

GRAHAM LUSK
NEW YORK

I have elsewhere described my visit to M. de Chazelles, the great grandnephew of Lavoisier, at his apartment in Paris.[1] Since that publication, the old gentleman has passed away at an age well over 90 years. This summer I had the honor and pleasure of being most kindly received at the beautiful summer home of Madame de Chazelles at the château de la Canière, a few miles from Vichy and near Puy-de-Dôme at the beginning of the French Pyrenees. It was up Puy-de-Dôme, a mountain 4,800 feet above the sea level, that Blaise Pascal, in 1648, at the age of 25, caused a barometer to be carried and there demonstrated the diminution of the weight of the atmosphere.

When I was a student in Munich, Carl Voit told his hearers that he understood that the original respiration apparatus of Lavoisier was in a cellar in Paris and that, should he ever visit Paris, he would very much like to investigate the matter. He said that Lavoisier's technic was entirely unknown. This was about the time of the publication of Grimaux's "Lavoisier,"[2] which contained reproductions of two drawings by Madame Lavoisier showing the technic involved. These drawings picture Lavoisier himself actively experimenting and Madame Lavoisier sitting at a table, taking notes.

That part of the apparatus of Lavoisier now on exhibition at the Conservatoire des Arts et Métiers in Paris was evidently selected by chemists or physicists, and indeed I was told that I was the first physiologist to see the other collection of apparatus now housed in the château de la Canière. It seems that almost immediately after the execution of Lavoisier at the time of the French Revolution, his family recovered possession of his apparatus, his library and his original manuscripts. In witness of the tragedy is the broken lock of a beautiful morocco portfolio, which had been pried open by his accusers in their search for evidence against him.

It is related that the great chemist Dumas has read over the manuscripts. It may be that in this mass of papers is hidden a description of the method by which Lavoisier made the first measurements of "basal metabolism" on man and noted that this metabolism was increased by food, work and cold, for no physiologist has ever read them. Lavoisier was executed before he was able to publish his methods in full.

Professor Le Goff, the French friend through whom I was introduced to Madame de Chazelles, and I reverently examined each bit of apparatus. We could compare the apparatus with the pictures drawn by Madame Lavoisier. We found the glass globes, the tall cylinders with petcocks at one end. There was a cork valve in a copper cylinder, indicating that a light air valve might have been constructed for use in the oblong box shown nearest the face mask in the second drawing of Madame Lavoisier (Grimaux, p. 128). Diligent search, however, failed to reveal this particular oblong box.

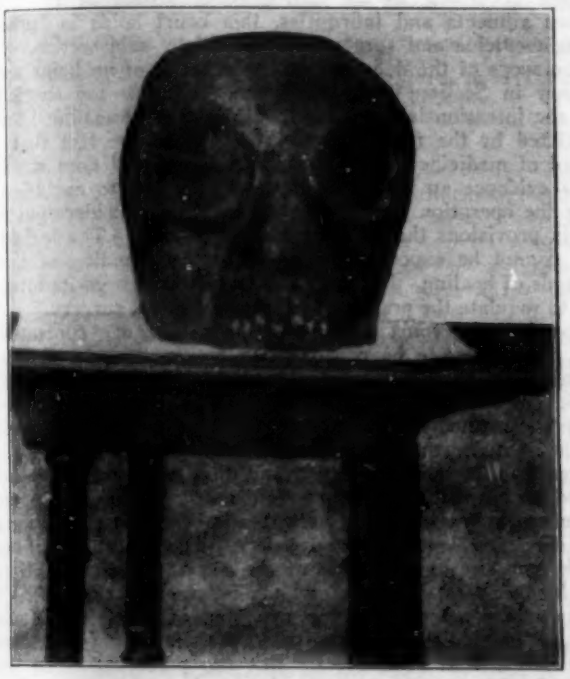
The surprise of the visit was the discovery of the original face mask used on the subject Seguin. The face mask was of copper and was fitted with two glass eyes similar to those used in diving bells. The mask continued so as fully to cover the nose. For some unknown reason, the nose of the mask is now perforated with holes. The edge of the mask was perforated for binding on the head. Probably the tube into which Seguin breathed was introduced through either leather

1. Lusk, Graham: Some Influences of French Science on Medicine, Proc. Inst. Med. Chicago 3:98, 1921.
2. Grimaux, E.: Lavoisier, Paris, 1888.

or rubber, which fell down from the nose piece of the mask and was fitted around the neck and around the head of the subject. We saw a large rubber bulb that had been used by Lavoisier, so the material must have been known to him.

Now it curiously happened that a few weeks after seeing this mask I was at Davos, and Prof. A. Loewy, the head of the alpine laboratory there, showed me a new, as yet undescribed respiration mask covering the whole head, which was almost the exact duplicate of what Professor Le Goff and I a few weeks earlier had concluded must have been the device employed by Lavoisier 140 years ago.

Other interesting objects that we saw were a simple laboratory chair with an elongated arm, made perhaps for convenience in taking the pulse rate, and a watch that not only registered the time by the twelve hour half day, but also simultaneously showed the time according to a new ten hour day. The Lavoisier library contained presentation copies from Laplace and many another treasure. And there were three small portraits of Count Rumford (Benjamin Thompson), a great friend of Lavoisier.



Copper mask used by Lavoisier in his estimation of the respiratory metabolism of man.

A bust of Lavoisier by Houdin and a very large rosewood desk used by Lavoisier were in the main hall of the château. A magnificent Empire bedroom suite given to Madame Lavoisier on the occasion of her unfortunate second marriage to Count Rumford indicated the splendor surrounding the lives of the aristocratic families of that time.

Among many drawings by Madame Lavoisier is one on which is written in the hand of her teacher David, "Très bien, très bien, très bien." The picture of Lavoisier and his wife painted by the great master David, the only portrait of him in existence, a treasure of surpassing worth, is now in an American home. A kindly Frenchman wrote me that he was glad to hear that it was in the hands of "your good countryman, Mr. J. Rockefeller, so devoted to the medical researches." To those who know what Mr. Rockefeller has done for the restoration of the Cathedral of Rheims and of the palace of Versailles, for the benefit of man now and in centuries to come, it will be gratifying to know that this great picture is held in trust by him.

Cornell University Medical College.

Medicolegal

Barred Evidence Against Roentgenologist—of Blood Test

(Unger v. Grimsley (Miss.), 103 So. R. 341)

The Supreme Court of Mississippi, Division A, says that plaintiff Grimsley brought this action to recover damages for a burn alleged to have been caused by the defendant's negligence and unskilfulness in applying roentgen rays to the plaintiff's hip. During the cross-examination of the defendant, and over his objections, he was required to testify in regard to an alleged roentgen-ray burn inflicted by him on another person two years after the alleged burn of the plaintiff. It was shown that the second burn was inflicted under entirely different circumstances, and with a different machine. The court thinks that testimony was inadmissible and highly prejudicial. The testimony in this case was in sharp conflict as to the number of exposures, and the length of those exposures, and the court thinks that on the testimony in the record the case was one for the jury; but for the error in admitting testimony of a subsequent burn of another person, the judgment of the court below for $2,000 in favor of the plaintiff must be reversed, and the cause remanded.

As to the contention of the defendant that the testimony of the director of the state hygienic laboratory, as to the contents of certain records of his office showing the result of a certain blood test, was admissible as a public record, under provisions of the code, the supreme court expresses no opinion, since it was not shown that the proffered testimony pertained to a blood specimen of the plaintiff, and consequently it was for that reason inadmissible.

Insufficient Allowance for Medical Treatment

(Baker v. Rundquist et al. (Minn.), 203 N. W. R. 452)

The Supreme Court of Minnesota says that the plaintiff while in the employ of the defendant sustained lacerated wounds on the right side of his face affecting his right eye. He was entitled to compensation. First aid was given by a local physician for ten days. No examination was made of the internal nasal region. Later the plaintiff consulted a specialist, who treated him. The referee allowed $9 for first aid. No further sum was allowed for medical attendance. Disability compensation, under the workmen's compensation act, was allowed for five weeks and three days. An examination of the evidence leads the court to the conclusion that the plaintiff was entitled to medical services additional to his first aid attention. He said that he had internal trouble in the nasal region. The physician who gave first aid treatment was not a specialist and gave treatment for the superficial wounds only. The specialist gave treatment, and he thought it was needed. It might be that some of the work done was not required by the injury. In any event the workman was entitled to exploratory treatment, and perhaps to all that he received. The charges made by the specialist might be high, but this court is not concerned with them now. Furthermore, as a matter of law the plaintiff's disability did not cease at the end of five weeks and three days. It was not long continued, but it did not cease so soon. The amount of the award should be reconsidered. It could not be large. The situation invited a settlement rather than further litigation.

Weakened Resistance an Injury—Pneumonoconiosis

(Kovaliski v. Collins Co. et al. (Conn.), 128 Atl. R. 288)

The Supreme Court of Errors of Connecticut, in holding that there was no error in a judgment affirming an award for the plaintiff, under the workmen's compensation act of that state, says that the compensation commissioner found that the plaintiff, who had been employed as a grinder, had received a personal injury consisting of pneumonoconiosis, which had developed into a mixed infection of a tuberculous, staphylococcic and streptococcic nature. The compensation act provides that if an injury arises out of and in the course of the employment, it shall be no bar to a claim for com-

pensation that it cannot be traced to a definite occurrence which can be located in point of time and place; also, that the word "injury" shall be construed to include any disease which is due to causes peculiar to the occupation and which is not of a contagious, communicable or mental nature. The defendants contended that the plaintiff having grinder's consumption, and that as that is a form of tuberculosis and tuberculosis is a contagious or communicable disease, therefore, it was not compensable under the statute. But the injury that developed into grinder's consumption was a weakened resistance to infection called pneumonoconiosis. This was an injury not contagious or communicable; hence the statute did not bar a recovery, when it became a compensable injury by infection causing incapacity. The character of the plaintiff's work as a grinder injured him by producing a condition of the lungs which offered weakened resistance to staphylococcus infection, to streptococcus infection, or to infection from the tubercle bacilli. His injury was the condition of weakened resistance to infection, and when such a condition of weakened resistance yields to infection and makes the workman unfit to work, the injury has become a compensable one. The consequent effects of the weakened resistance to infection in this case, namely, the infection producing grinder's consumption, was not the injury compensated for; it was the weakened resistance to infection which was the injury compensated for; the consequences of that condition when infection occurred was deemed a part of the weakened resistance to infection. The injury occurred when the condition of weakened resistance arose. When the injury (the weakened resistance to infection) arises in the course of and out of the employment, then every consequence that flows from it likewise arises out of the employment.

No Prohibition Against Issuing Prescriptions

(Aiton v. United States (U. S.), 3 Fed. R. (2d Series), 992)

The United States Circuit Court of Appeals, Ninth Circuit, in reversing a judgment of conviction of defendant Aiton and in doing it with instructions to sustain a demurrer to the indictment and quash the latter, says that it need consider only the one count of the indictment on which the conviction was had. That count charged that the defendant, who was a practicing physician and duly registered with the collector of internal revenue, did unlawfully issue and write and deliver a prescription to a named person for 56 grains of morphin sulphate, not in good faith for meeting the needs of said person and not to effect a cure of him in the course of professional practice only, said person being a habitual user of and addicted to the use of narcotic drugs, nor to treat said person then and there suffering from an incurable or chronic disease, in the course of his professional practice only, but, on the contrary, with the intent and purpose to dispense, distribute, barter and sell such narcotic drugs for the purpose of catering to and satisfying the cravings of said person for said drug. The indictment stated on its face that it was based on Section 1 of the Act of Dec. 17, 1914 (the Harrison Narcotic Act), but the government conceded that the reference should have been to Section 2. However, it would be as difficult to sustain the indictment under the latter section as under the former. Section 2 only prohibits the sale, barter, exchange, giving away, dispensing or distribution of drugs, except in certain cases not material here. There is no prohibition in that section or elsewhere in the act against issuing, writing or delivering prescriptions by a physician, regardless of the intent of the physician or the purpose for which the drugs are to be used.

It was to be inferred from the language of the indictment that it was based on the decisions in *United States* v. *Doremus*, 249 U. S. 86, 39 Sup. Ct. 214, and kindred cases, in which indictments were sustained by the supreme court. But it will be found on examination that in every such case, except where a conspiracy was charged, the indictment charged a sale or other distribution of drugs, and that in the conspiracy cases the charge was a conspiracy to sell or distribute drugs, not a conspiracy to issue, write or deliver prescriptions. For these reasons the count of the indictment under consideration charged no crime, and the demurrer should have been sustained.

"Practice of Medicine and Surgery" by Chiropractor

(State v. Morrison (W. Va.), 127 S. E. R. 75)

The Supreme Court of Appeals of West Virginia, in affirming a judgment of conviction of the defendant for practicing medicine and surgery as defined by Section 8a, Chapter 150, in the 1923 code of that state, without first having obtained a state license to do so, says that the weight of authority is to the effect that one who practices the chiropractic art or science comes within the provisions of a statute regulating the practice of medicine. Said Section 8a provides that the term "practice of medicine and surgery" as used by the West Virginia statute shall be construed to be the "treatment of any human ailment or infirmity by any method"; and that "to open an office for such purpose or to announce to the public in any way a readiness to treat the sick or afflicted, shall be deemed to engage in the practice of medicine and surgery within the meaning of this act." One who opens an office and announces to the public in any way that he is ready to treat the sick and afflicted, and has actually treated cases of paralysis, constipation, rheumatism, neuritis, sick headache, kidney trouble, lumbago, liver trouble, and divers other diseases by adjustment of the segments of the spinal column according to the chiropractic method of treating human ailments and infirmities, this court holds is "practicing medicine and surgery" as defined by said section.

The scope of the definition of the practice of medicine and surgery in Section 8a is too broad, its terms too explicit, and the intention is too plain to allow it to be modified and restricted by the former legislation. The mere fact that a school of medicine is not specifically mentioned does not in itself evidence an intention of the legislature to exclude it from the operation of the statute, if from a consideration of all its provisions the contrary clearly appears. The legislature cannot be expected to anticipate the founding of new methods of healing. It has by this statute evidenced its intention to regulate the practice of all medicine and surgery.

Nor does the court agree with the defendant's contention that, if the statute be construed to require him to pass an examination on the science of medicine, drugs and materia medica, as recognized and taught in Class A medical schools, or on the methods or practices peculiar to surgery as therein taught in order that he might lawfully practice his method of treatment of human ailments and diseases, then the statute would be unconstitutional and void as depriving him of the pursuit of a lawful calling as a means of acquiring property and obtaining happiness and safety. The statute does not contravene any of the rights of the defendant guaranteed to him by the West Virginia and the federal constitutions. It is undoubtedly true that the privilege of engaging in the practice of medicine is a valuable property right protected by constitutional guarantees. But the preservation of the public health by the sovereign power is paramount to the exercise of the private privilege by the individual, and consequently the state has the inherent right by means of its police power to impose such reasonable restrictions on the practice of medicine as are deemed necessary to attain the end in view, the preservation of the public health.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 20-24. Dr. Luther C. Peter, Chestnut and 20th Streets, Philadelphia, Secretary.
American Association of Railway Surgeons, Chicago, Oct. 21-23. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.
American College of Radiology and Physiotherapy, Chicago, Oct. 19-22. Dr. Roy W. Fouts, 121 South 33d Street, Omaha, Neb., Secretary.
American College of Surgeons, Philadelphia, Oct. 26-30. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.
American Public Health Association, St. Louis, Oct. 19-22. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.
Central Neuropsychiatric Association, Ann Arbor, Oct. 23-24. Dr. Karl A. Menninger, Neuropsychiatric Clinic, Topeka, Kan., Secretary.
Central States Pediatric Society, Chicago, November 6-7. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.
District of Columbia, Medical Society of, Washington, D. C., Dec. 2. Dr. C. B. Conklin, 500 Medical Science Bldg., Washington, D. C., Sec'y.
Radiological Society of North America, Cleveland, Dec. 7-11. Dr. Robert J. May, St. Luke's Hospital, Cleveland, Secretary.
Southern Medical Association, Dallas, Texas, November 9-12. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.

Current Medical Literature

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

30: 291-452 (Sept.) 1925

*Lowered Basal Metabolism in Postinfectious States and in Diseases Characterized by Slow Pulse Rate. B. Schick and P. Cohen, New York.—p. 291.
*Energy Metabolism of Premature and Undersized Infants. M. E. Marsh and J. R. Murlin, Rochester, N. Y.—p. 310.
*Nitrituria. R. M. Greenthal, Milwaukee.—p. 321.
Variability in Weight for Height in Children of School Age. H. K. Faber, San Francisco.—p. 328.
*Diabetes Mellitus in Infant Aged Eight Months Treated with Insulin. J. C. Schippers, Amsterdam, Holland.—p. 336.
*Malnutrition in Infants with Cleft Palate; New External Obturator. J. A. Foote, Washington, D. C.—p. 343.
Massive Collapse of Lung in Boy Aged Ten Years. I. A. Abt, Chicago.—p. 347.
Growth of Heart. L. R. DeBuys and E. C. Samuel, New Orleans.—p. 355.
*Nitrogen and Mineral Balances in Infants Receiving Cow's and Goat's Milk. A. L. Daniels and G. Stearns, Iowa City, Iowa.—p. 359.
Diphtheria: Review of Literature for 1924. T. T. Crooks, Chicago.—p. 367.

Low Basal Metabolism in Postinfectious States.—Schick and Cohen assert that many patients with acute infections in their postinfectious state have a low basal metabolism. This low metabolism usually lasts for a few days, in some cases for a few weeks. The usual curve of the basal metabolism in the postinfectious state begins with a low figure, rising to normal in about one week. Two patients with meningeal conditions had a low basal metabolism for weeks, coincident with a low pulse. In one case, the basal metabolism and the pulse rate rose to normal simultaneously. Usually there is a good correlation between the pulse and metabolism. The authors believe that a slow pulse is a good clue to the finding of a low metabolism, especially if the heart is of normal size. In the cerebral diseases in which extraneous factors have the least influence on the pulse rate, a slow pulse rate and a low basal metabolism were found in two reported cases and also in one case of a protracted postpneumonic bradycardia. The rise of metabolism and the increase of the pulse rate occurred together. The authors believe that the slow pulse at postinfectious states of certain brain diseases and of icterus is caused by a low basal metabolism and not by a stimulation of the vagus, at least in most instances. A theory is outlined which attempts to explain the low basal metabolism in these conditions.

Energy Metabolism of Premature Infants.—Energy metabolism has been determined by Marsh and Murlin in eighty-two observational periods on twenty-one premature and undersized infants, including five pairs of twins. The average basal respiratory quotient was low (0.74) through the fifth day, rose to 0.79 on the sixth day but never above this figure through the ninth day; whereas the quotient for a child in good nutritive condition, at least after the first week, should be about 0.85. The basal metabolism of these twenty-one infants averages 6.48 calories per hour, or 26.25 calories per square meter (Lissauer) and 2.04 calories per kilogram per hour. When the basal metabolism per square meter is averaged according to days of age there is a fluctuation during the first week, the lowest value coming on the seventh day with a higher value on the eight and ninth days. Each day the metabolism is definitely lower than for the value obtained for normal babies born at term. Increases in heat production with activity varies from 2.5 per cent. with slight restlessness, to 40.3 per cent., when the child cried 39.0 per cent. of the time. In a limited number of periods and all on infants one month, or less, premature, the observation made previously for full-term babies, that is, crying 1 per cent. of the time increases the metabolism 1 per cent., seems to hold fairly well. An increase of 42.1 gm. of food increased the metabolism 5.19 calories per square meter per hour, or 21.3 per cent.

Nitrituria.—Greenthal has found a positive nitrite reaction in freshly passed urine at times in about 50 per cent. of cases of pyuria due to nitrate-reducing organisms. A positive reaction is valuable as an aid to diagnosis, but a negative reaction has no significance. The failure of the nitrite test in these cases is due chiefly to a lack of nitrate in the urine. A modification of the Griess-Ilosvay test for nitrituria is presented.

Fatal Diabetes in Infant.—Notwithstanding temporary improvement in every respect under insulin treatment, Schippers' patient died in coma at the age of 25 months.

External Obturator for Nostrils in Cleft Palate.—Foote stops the nostrils with a simple strip of dental rubber dam about 2 inches wide and 4 inches long, to which are attached tapes at each side in the longest diameter. This is placed over the infant's nose, and the tapes are tied so that the rubber is stretched with sufficient tightness to block off the nostrils, the lower end of the rubber dam lying over the lip and the pipple. This obturator effectually excludes air.

Nitrogen and Mineral Balances in Infants.—A comparative study of the calcium, phosphorus and nitrogen balances has been made by Daniels and Stearns in infants receiving cow's and goat's milk feedings, respectively. Milk from two goats, having a somewhat different composition, was tested separately. The urinary phosphates in all infants receiving goat's milk was higher than during the periods when they were receiving cow's milk, even though the phosphorus ingested (in two cases) was no higher than in the corresponding periods when they were receiving cow's milk. The calcium and phosphorus balances during the goat's milk periods did not indicate that the inorganic moiety of the goat's milk was superior to cow's milk. Nor did the ratio of phosphorus to calcium retained by infants receiving goat's milk suggest that this is better than cow's milk. On goat's milk all infants retained considerably less nitrogen (from 17 to 25 per cent. in one series and from 42 to 44 per cent. in another) than during the corresponding period, when they were receiving cow's milk.

American Journal of Psychiatry, Baltimore

5: 1-170 (July) 1925

Peculiarity of Thought in Schizophrenia. H. S. Sullivan, Baltimore.—p. 21.
Familial Preadolescent Mental Deterioration and Blindness: Histology of One Case. A. E. Taft and J. P. Munroe, Philadelphia.—p. 87.
Studies of Gastric Secretion and Motility in Mental Patients. C. B. Farr, C. W. Lueders and E. D. Bond, Richmond, Va.—p. 94.
Relation of Social Work to Psychiatry. R. P. Truitt, New York.—p. 103.
Psychiatry of Hippocrates. J. R. Oliver, Baltimore.—p. 107.
Industrial Neurosis. M. Osnato.—p. 117.
Conversion Hysteria in Child. P. R. Lehrman, New York.—p. 133.
Mental Disorders of Childhood. C. W. Burr, Philadelphia.—p. 145.
Relation of Intelligence to Etiology of Drug Addiction. L. Kolb.—p. 163.

American Review of Tuberculosis, Baltimore

11: 471-550 (Aug.) 1925

Extrapleural Thoracoplasty for Pulmonary Tuberculosis. H. Lilienthal, New York.—p. 479.
Action of Light on Living Matter. B. O'Brien, Perrysburg, N. Y.—p. 486.
*Newer Conception of Tuberculid. N. Tobias, St. Louis.—p. 492.
*Clinical Study of Skin Hypersensitiveness to Tuberculin. P. M. Andrus, London, Ont.—p. 499.
*Dreyer's Antigen. C. H. Boissevain, Colorado Springs.—p. 507.
*Tuberculo-Complement-Fixation and Inhibitive Tests. A. H. W. Caulfeild, W. H. Hodge, M. F. MacLennan, F. LaRush, W. E. Ogden, H. MacIntyre, G. C. Anglin and C. Cohen, Toronto, Can.—p. 508.

Tuberculoid.—Tobias favors the term tuberculoid, advocated by Darier, for the condition known as tuberculid as being a more appropriate designation.

Skin Hypersensitiveness to Tuberculin.—For four and a half years Andrus has employed tuberculin intracutaneously more or less as a routine measure. This study is based on an analysis of 1,728 tests on an even 1,000 adult admissions. The majority received tests shortly after admission, and many were tested at varying intervals during residence and at discharge. Of these patients, fifty-eight were considered to have

nonactive pulmonary tuberculosis, and not to require treatment; 114 were diagnosed nontuberculous, although the majority of them had chronic pulmonary or bronchial affections, and the remainder were considered to have active pulmonary or bronchial affections, and to be in need of treatment. In this series the presence of the general tuberculin reaction (as indicated by fever) has no constant bearing on the degree of tuberculin skin hypersensitiveness. The degree of tuberculin skin hypersensitiveness offers no clue to differentiate active from nonactive pulmonary tuberculosis in a clinical way. In the absence of definite tuberculous involvement, negative tuberculin skin tests would tend to throw the balance of evidence in favor of a nontuberculous diagnosis. In tuberculosis diagnostic problems the presence of well marked tuberculin skin reactions would tend to throw the balance of evidence in favor of a tuberculous diagnosis. The earlier and more favorable types of tuberculosis tend to the higher levels of tuberculin skin hypersensitiveness, and the more advanced and less favorable types to the lower levels. No characteristic changes in degree of tuberculin skin hypersensitiveness occur during the favorable progress of tuberculous disease. Changes occur one way or the other in about 40 per cent. of cases relatively early and then tend to maintain a constant level. The level of tuberculin skin hypersensitiveness rises in 50 per cent. of tuberculous individuals at the time of relapse. The data as offered by degree of, or changes in, tuberculin skin hypersensitiveness are of small practical value in the clinical estimation of a given case.

Dreyer's Antigen.—Some observations made by Boissevain on the defatted *B. tuberculosis* antigen of Dreyer are reported. His observations do not justify any inferences regarding the effect of the antigen on chronic experimental tuberculosis. Two patients with far advanced pulmonary tuberculosis have, at their own request, been treated with the same antigen. The treatment, continued now for about eight months, has not shown any notable effects, either favorable or unfavorable.

Tuberculo-Complement-Fixation and Inhibitive Tests.—The results obtained by Caulfeild, Hodge, MacLennan, LaRush, Ogden, MacIntyre, Anglin and Cohen by carrying out two serologic tests periodically during several years' observation on "normals," contacts and cases of tuberculous and nontuberculous disease have been classified and given in percentages. From these an approximate diagnostic value can be drawn. Among the normals there was serologic evidence for suspecting the presence of tuberculous lesions in twelve, and this was subsequently confirmed in two by at least two other methods of investigation. Among the contacts there were similar grounds for suspecting that the exposure had resulted in an implantation of the bacilli in over 40 per cent. Among the cases the tests were helpful in estimating the probability of tuberculosis as a correct diagnosis, and among the definitely tuberculous in vizualizing the progress frequently before there were appreciable clinical evidences of a change in the course of the disease. The tests will not give a satisfactory short cut (laboratory) diagnosis for or against tuberculosis. If this is demanded the results will be disappointing or misleading because (*a*) the tuberculin complement fixation reaction is negative in a considerable percentage of the tuberculous; (*b*) because it is at least weakly positive in a large number who are evidently not tuberculous; (*c*) because the inhibitive test can consistently be normal in a large percentage of the definitely tuberculous, and (*d*) because an occasional case will give a positive inhibitive test in which there will be no grounds for suspecting clinical tuberculosis.

Archives of Dermatology and Syphilology, Chicago

12: 325-464 (Sept.) 1925

XLIII. "Erythema Group" of Skin Diseases. M. F. Engman and R. S. Weiss, St. Louis.—p. 325.
*Wassermann Test. XV. Effect of Bismuth on Wassermann Reaction in Patients Unresponsive to Arsphenamin. D. L. Belding, Boston.—p. 334.
*Sigma Reaction for Syphilis. H. E. Smiley, Providence, R. I.—p. 345.
*Cause of Nitritoid Crisis Following Intravenous Injection of Arsenicals. E. F. Müller, New York.—p. 349.
Leukoderma Following Dermatitis Venenata (Rhus Toxicodendron). L. McCarthy and L. K. McCafferty, New York.—p. 356.
*Universal Psoriasis Complicated by Tumor-Like Formations; Case. O. L. Levin, New York.—p. 360.
*Lichenoid Sarcoid; Case. C. S. Wright, Philadelphia.—p. 374.
Studies on Hair; Hypertrichosis. C. H. Danforth, Stanford University, Calif.—p. 380.

Effect of Bismuth on Wassermann Reaction.—The effect of bismuth on the Wassermann antibody in the so-called Wassermann-fast patients, who do not respond serologically to arsenic and mercury is discussed by Belding. Bismuth treatment lowers the strength of the Wassermann antibody not only in patients who are responsive to arsphenamin, but also in those who are unresponsive. The average reduction in the series studied by Belding composed largely of arsphenamin-resistant patients, was 39 per cent. which probably represents the minimum effect of bismuth. Nine tenths of the reduction was obtained four weeks after the end of treatment, and the remaining one tenth by the sixteenth week. In patients with old syphilis, bismuth does not give any slower serologic action than the arsphenamins. The reduction appears permanent, at least it was permanent for the six months the patients were under observation. The few patients who showed a relapse received less than the standard dosage. Variable factors such as the strength of the reaction, the clinical stage and duration of the disease and the total dosage, which usually render serologic interpretations of doubtful value, exerted a negligible influence in this particular series and permitted direct comparison between patients responsive and unresponsive to arsphenamin. However, the extent of the reduction of the Wassermann antibody corresponded to the intensity of treatment. All the Wassermann-fast patients in this series had shown no change in the strength of the Wassermann antibody under treatment with arsphenamin. One half of these patients reacted to bismuth as compared with five sixths of the patients who were responsive to arsphenamin. Also the quantitative reduction of the Wassermann antibody in these patients was one half that of the arsphenamin responsive patients. After the first course of treatment the total amount of arsphenamin and mercury given had no apparent influence on the action of bismuth.

Sigma Reaction for Syphilis.—Smiley regards the sigma reaction as offering a reliable index in following the effect of a course of treatment for syphilis. The validity of the sigma reaction is apparently not affected by treatment. Much more information can be gained from a course of sigma readings than from a similar course of Wassermann readings.

Nitritoid Crisis Following Intravenous Injection of Arsenicals.—It was observed by Müller that the patients who reacted to arsphenamin with unusual symptoms of a nitritoid crisis and those who showed equally unusual symptoms after injections of silver arsphenamin, i. e., a decrease in the number of leukocytes in the blood with or without visible manifestations, will also react positively to the Widal test without showing any apparent sign of hepatic involvement. Müller is convinced that the unusual reaction in the blood following injections of silver arsphenamin into patients who also show symptoms of a nitritoid crisis after administration of arsphenamin is not due to the drug, but rather to a pathologic reactivity of the involuntary nervous system. This abnormal reactivity, latent in the body before injection and manifested by an unusual reaction of the body itself, is due to a disturbance of the involuntary nervous system.

Universal Psoriasis and Tumor-Like Lesions.—Report is made by Levin of a case of universal psoriasis complicated by the presence of what the author considers a hitherto undescribed feature of tumor-like lesions. The tumors showed a pathology which differed in no way from that observed in a typical case of psoriasis; and the microscopic findings of the tissue from the general eruption and the infiltrated strands on the thighs were similar to those seen in the tumor growths, differing only in degree of hypertrophy of the rete pegs, the infiltration and the intensity of the edema. The tumor growths were even more edematous than was shown under the microscope, and it was concluded, therefore, that the tissue must have contracted considerably by means of the chemicals and heat during the preparation of the slides. The strandlike, elevated infiltrations of firm and doughy consistency on the thighs, and the involvement of the lips and nails were also unusual features. The characteristic

clinical lesions and tumors both disappeared subsequent to autoserotherapy, and on cessation of this form of treatment, the lesions recurred. Autohemotherapy caused a slight involution of the lesions, thus modifying the eruption, but no radical change was produced by this form of treatment.

Lichenoid Sarcoid.—The case reported by Wright presented a most unusual form of sarcoid; it appeared first as areas of loss of pigment in which lichenoid plaques developed. The condition was associated with pulmonary tuberculosis, which apparently developed four years after the appearance of the cutaneous manifestations.

Archives of Neurology and Psychiatry, Chicago

14: 289-434 (Sept.) 1925

*Thalamus in Physiology and Pathology of Mind. F. X. Dercum, Philadelphia.—p. 289.
Cerebrospinal Fluid from Different Loci. J. B. Ayer and H. C. Solomon, Boston.—p. 303.
*Reduction of Normal Cerebrospinal Fluid Pressure by Intravenous Administration of Hypertonic Solutions. H. S. Howe, New York.—p. 315.
Cerebrospinal Fluid in Lead Poisoning. C. V. Weller and A. D. Christensen, Ann Arbor, Mich.—p. 327.
*Intracranial Dermoid Cysts; Case. C. W. Rand, Los Angeles.—p. 346.
Significance of Jacksonian Epilepsy in Focal Diagnosis of Cerebral Lesions. W. B. Cadwalader, Philadelphia.—p. 358.
Porencephaly. E. R. LeCount and C. B. Semerak, Chicago.—p. 365.
Weir Mitchell Rest Cure Forty Years Ago and Today. T. H. Weisenburg, Philadelphia.—p. 384.
*Cerebrospinal Fluid Sugar. F. Fremont-Smith and M. E. Dailey, Boston.—p. 390.
Glioma of Bulb and Pons; Four Cases. P. Bassoe and C. W. Apfelbach, Chicago.—p. 396.

Relation of Thalamus to Mind.—In summing up his consideration of the rôle of the thalamus in the physiology and pathology of mind, Dercum points out that while in the interaction of the thalamus and cortex, the cortex is normally dominant, the thalamus controls the gateways of admission and in diseased states may hold the cortex at its mercy. While the nuclear aggregations of the thalamus are undoubtedly influenced by the internal secretions, the thalamus in its turn contains centers which profoundly influence metabolism. These centers are situated in the floor of the hypothalamus and are probably in close relation with the visceral nuclear aggregations and have to do with the reactions of the latter on each other. That the resulting emissive streams should in turn influence the activities of the viscera, and among these especially the glands concerned in anabolic and catabolic changes, is, perhaps, what should naturally be expected.

Effect of Hypertonic Solutions Administered Intravenously on Cerebrospinal Fluid Pressure.—Experiments have been made by Howe to determine the effect of the intravenous administration of various hypertonic solutions on the cerebrospinal fluid pressure of cats. Concentrated solutions of sodium bicarbonate, sodium sulphate, sodium citrate, sodium chlorid, sodium bromid, calcium lactate, calcium chlorid, magnesium sulphate and dextrose have been used. A few observations with a combination of electrolytes have also been made in the proportions given in the Ringer-Locke and Tyrode solutions. Sodium bromid, calcium lactate, calcium chlorid and magnesium sulphate were found to be too toxic. Sodium citrate, sodium tartrate and sodium bicarbonate were relatively ineffective. Sodium sulphate, sodium chlorid, concentrated Ringer-Locke solution and concentrated Tyrode solutions and dextrose produced satisfactory depressions. Sodium sulphate was nontoxic at first but has been reported by Weed and McKibben to have caused death later, and so is unsafe for clinical use. Sodium chlorid produced the most pronounced decrease in intracranial pressure of any substance used, but it is toxic unless administered very slowly. Furthermore, as it is later mobilized in the tissues producing a secondary wave of edema, as shown by Fay, it is considered unfit for general clinical administration. The same objections apply to concentrated Ringer-Locke and Tyrode solutions although they are somewhat less toxic. Dextrose is the only substance of this group which is nontoxic and produces a satisfactory fall in intracranial pressure.

Intracranial Dermoid Cysts.—Rand reports a case of intracranial dermoid cyst. The wall resembled true dermis containing hair follicles, sweat glands and stratified squamous epithelium. The central mass was filled with débris composed of desquamated cells, among which were scattered fine hairs and cholesterin crystals. It was attached to the dura in the left temporal region and should probably come under the classification of "meningeal cholesteatoma" suggested by Horrax. The outcome of the case was disappointing. The cyst became infected after its first opening, and its ultimate complete removal was followed by local meningitis and brain abscess, to which the patient succumbed.

Determination of Spinal Fluid Sugar.—Fremont-Smith and Dailey insist that spinal fluid sugar should be determined on patients fasting, preferably over night, and compared with coincident blood sugar.

Archives of Ophthalmology, New York

54: 423-529 (Sept.) 1925

Obscure Affection of Conjunctiva Resembling Cases of Parinaud's Syndrome. R. E. Wright, Madras.—p. 423.
Case of Orbital Neuronomia. M. Cohen, New York.—p. 425.
Acute Dacryo-adenitis Caused by Focal Infection. M. L. Foster, New Rochelle, N. Y.—p. 430.
"Keratitis Punctata Superficialis;" Case. A. W. Stirling, Atlanta, Ga.—p. 432.
Genesis of Myopia. G. Levinsohn, Berlin.—p. 434.
Nonsurgical Treatment of Heterophoria in Ametropia. H. W. Wooten, New York.—p. 440.
Percentage Evaluation of Macular Vision. A. C. Snell and S. Sterling.—p. 443.
Syphilis and Iritis. H. D. Bruns, New Orleans.—p. 462.
Reviving Operation of Couching. G. L. Johnson, Durban, S. A.—p. 466.
Ophthalmic Disorders of Endocrine Origin in Women. O. R. Lourie, Boston.—p. 469.
Neurofibromatosis with Buphthalmus; Case. A. Wiener, New York.—p. 481.

Arkansas Medical Society Journal, Little Rock

22: 81-100 (Sept.) 1925

Functions of Present Day Practitioner and His Duty in Application of Present Day Scientific Medicine. H. Thibault, Scott.—p. 81.
Exceptional Child. W. M. Brewer, Little Rock.—p. 84.
Relations of Specialists to the General Practitioner. H. J. G. Koobs, Rogers.—p. 85.
Case of Complete Transposition of Viscera. J. S. Wilson, Lake Village.—p. 89.

Atlantic Medical Journal, Harrisburg, Pa.

28: 813-924 (Sept.) 1925

Retrospect of Medical Development in Pennsylvania. J. W. Ellenberger and G. L. Laverty, Harrisburg.—p. 811.
Cancer of Rectosigmoid Tract. D. B. Pfeiffer, Philadelphia.—p. 814.
Congenital Syphilis. A. Dattner, Wilkes-Barre.—p. 818.
Treatment of Nonsuppurative Deafness. J. A. Babbitt, Philadelphia.—p. 821.
*Chronic Otorrhea. A. J. Wagers, Philadelphia.—p. 827.
Chronic Bronchitis. T. T. Sheppard, Pittsburgh.—p. 833.
*Sporotrichosis, Case from Pennsylvania. F. C. Knowles, E. F. Corson and H. B. Decker, Philadelphia.—p. 835.

Mercurochrome Treatment of Chronic Otorrhea.—In the treatment of these cases Wagers uses mercurochrome, 5 per cent. in 50 per cent alcohol, dropped into the canal and middle ear, the head resting on the side. The canal is tightly plugged with cotton to prevent the outflow of the solution, which stains the skin. Of the forty-five ears treated, twenty-three, or 51.1 per cent., became dry after an average of 6.5 applications. Sixteen cases were recorded as improved; six were not. Eight definitely dry ears were secured in a series of 162.

Sporotrichosis in Pennsylvania.—Six cases of sporotrichosis have been observed in Pennsylvania in which the fungus has been cultured and isolated. The seventh case is reported by Knowles, Corson and Decker.

Boston Medical and Surgical Journal

193: 535-582 (Sept. 17) 1925

Psychotherapy. C. M. Campbell, Boston.—p. 535.
Frequency of Bilateral Renal Tuberculosis. J. D. Barney and S. G. Jones, Boston.—p. 540.
Thoracoplasty in Advanced Pulmonary Tuberculosis. W. Whittenmore, Boston.—p. 542.
*Inevitable Damage Consequent on Goiter. F. A. Coller, Ann Arbor, Mich.—p. 545.
Intestinal Obstruction in Infant Due to Mesenteric Cyst with Volvulus. G. D. Cutler and J. C. Merriam, Boston.—p. 550.

*Milton Experience with Antirabies Inoculation of Dogs. P. R. Withington, Milton, and G. H. Bigelow, Boston.—p. 552.
Weeil's Disease; Sporadic Case. O. O'Neill and E. Ottenheimer, Williamantic, Conn.—p. 555.
VIII: Convalescent Work in U. S. Army. J. Bryant, Boston.—p. 557.

Goiter.—Endemic goiter is composed of colloid and adenomatous elements. In early life the colloid element predominates; after 25, the adenoma predominates. These changes are progressive and constant and in time, the length of which is well established, will cause the appearance of symptoms. Coller shows that frank hyperthyroidism caused by endemic goiter will be found to increase in frequency from the latter part of the third decade to the fifth and sixth decades when at least a third of the cases will have it. Definite cardiovascular damage will appear in at least a quarter of the cases with hyperthyroidism and in a smaller, but appreciable, number of cases with normal metabolic rates. Endemic goiter is a precancerous lesion with an incidence of malignancy of at least 3 per cent. Endemic goiter causes many mental changes of a minor, but disabling, nature and in those with a psychopathic inheritance may excite the appearances of some mental abnormalities. The progressive nature of the goiter pathology and the appearance of symptoms makes it possible to attack the goiter at a time when medication has ceased to be effective and when the changes begin to menace the health of the patient. The surgical removal of the adenomatous goiter at this time will prevent the appearance of the great morbidity otherwise to be expected. The removal of adenomatous goiters should be advised on diagnosis in individuals after the age of 25.

Management of Rabies Outbreak.—In consequence of five cases of canine rabies developing in Milton, Mass., during the first few weeks of 1925, the board of health carefully reviewed the whole question of the prevention of this disease. It at first offered voluntary inoculation of dogs at which only about 18 per cent. of the dogs were immunized. Then in the presence of growing popular interest, choice of restraint, muzzling, or inoculation was ordered. There was some difference of opinion as to whether under the existing law muzzling had to be offered as an alternative but there was no doubt of its utter futility. In the end about 41 per cent. of the dogs were immunized. Efforts to enforce restraint met with the customary indifferent results. As quarantine of any common communicable disease in a given community is in general no better than public opinion demands, so the quarantine of dogs to which public opinion was largely indifferent was indifferently enforced. This is the conventional situation and suggests that more and more dependence must be placed on active immunization to protect communities against the ravages of rabies. Withington and Bigelow are of the opinion that it is practical to require inoculation as a prerequisite to licensing dogs, as advocated in New Jersey.

Florida Medical Association Journal, St. Augustine and Jacksonville

12: 59-92 (Sept.) 1925

Roentgen-Ray Diagnosis of Gallbladder Disease; Cholecystography After Intravenous Dye Injection. J. A. Beals, Jacksonville.—p. 59.
Diagnosis of Disease of Gallbladder. T. Z. Cason, Jacksonville.—p. 61.
Postoperative Care of Gallbladder Diseases. R. O. Lyell, Miami.—p. 63.
Practical Management of Hypertension Syndrome. A. H. Bunce, Atlanta, Ga.—p. 65.
Some Reasons Why We Should Affiliate with Our County and State Medical Associations. J. C. Davis, Jr., Quincy.—p. 69.

Indiana State Medical Association Journal, Ft. Wayne

18: 311-374 (Sept.) 1925

Treatment of Cardiac Decompensation. J. Wynn, Indianapolis.—p. 311.
Psychopath. R. M. Funkhouser, Indianapolis.—p. 317.

Johns Hopkins Hospital Bulletin, Baltimore

37: 157-216 (Sept.) 1925

Medical Treatment of Pyloric Stenosis of Infants. W. C. Davison, Baltimore.—p. 157.
*Sporothrix Infection of Large Intestine and Finger Nails. T. R. Boggs and H. Fried, Baltimore.—p. 164.
Comparison of Kahn with Wassermann Test. M. H. Faupel, Philadelphia.—p. 170.
*Intravenous Injections of Fluid and Repeated Blood Volume Determination. H. P. Smith, Baltimore.—p. 177.
Hippocrates. J. R. Oliver, Baltimore.—p. 189.
*Right-Sided Diaphragmatic Hernia: Case Occurring with Intrathoracic Neoplasm Compressing Right Phrenic Nerve. J. C. White, Baltimore.—p. 203.

Sporothrix Infection of Large Intestine.—Boggs and Fried relate the occurrence of an acute and severe dysentery associated with the presence of a sporothrix-like organism in the stools in great numbers, and the clearing up of the condition coincidently with the destruction of the organisms by an antiseptic dye, thus seemingly justifying the tentative association of these as cause and effect. This is further strengthened by the fact that the organism belongs evidently to a group which has furnished pathogenic strains affecting the lungs, skin and lymph glands in numerous reported cases from widely scattered regions of the world. Additional interest is given this case from the association of a mycotic infection of the finger-nails for years preceding the acute intestinal infection with the same organism. It is conceivable, at least, that the patient had taken spores into her intestinal tract for years as a result of biting her nails, and that some incidental factor may have determined the implantation of the organism on the intestinal mucosa. This factor may have been a change in the intestinal resistance, through traumatic or toxic agencies, or an alteration in the virulence in the organism itself.

Blood Changes Resulting from Intravenous Glucose Injections.—Certain blood changes resulting from the injection of large quantities of glucose solution are described by Smith. The blood volume changes indicated by the dye method agree quite well with changes indicated by alterations in hematocrit and hemoglobin. Reasons are given for the failure of Lamson and Rosenthal to obtain concordant results in somewhat similar infusion experiments.

Diaphragmatic Hernia.—White cites a case of right-sided diaphragmatic hernia containing the liver, gallbladder, hepatic flexure of the colon and omentum. The case is complicated by a chronic ulcer in the esophagus, chronic empyema, acute pericarditis and a peculiar type of malignant tumor. From the history and necropsy findings a theoretic explanation is advanced for the formation of the hernia, but the exact classification and point of origin of the tumor could not be determined.

Journal of Biological Chemistry, Baltimore

65: 1-278 (Aug.) 1925

Glycolysis in Vitro. S. Morgulis and O. Barkus, Omaha.—p. 1.
*Rate of Elimination of Ingested Sugars in Phlorhizin Diabetes. H. J. Deuel, Jr., and W. H. Chambers, New York.—p. 7.
*Animal Calorimetry. XXX. Metabolism of Glycerol in Phlorhizin Diabetes. W. H. Chambers and H. J. Deuel, Jr., New York.—p. 21.
Lactone Formation from Mono- and Dicarboxylic Sugar Acids. P. A. Levene and H. S. Simms, New York.—p. 31.
Configurational Relationships Between β-Hydroxy Acids and α-Hydroxy Acids and Between the Latter and Secondary Alcohols. P. A. Levene and H. L. Haller, New York.—p. 49.
*Blood Sugar Time Curves Following Ingestion of Dihydroxyacetone. I. M. Rabinowitch, Montreal.—p. 55.
Nitrogen Distribution and Percentages of Some Amino-Acids in Muscle of Shrimp, Peneus Setiferus (L.). D. B. Jones, O. Moeller and C. E. F. Gersdorff, Washington, D. C.—p. 59.
*Iron in Nutrition. I. Nutritional Anemia on Whole Milk Diets and Utilization or Inorganic Iron in Hemoglobin Building. W. B. Hart, H. Steenbock, C. A. Elvehjem and J. Waddell, Madison, Wis.—p. 67.
*Nitrogenous Constituents of Juice of Alfalfa Plant. IV. Betaine Fraction. H. B. Vickery, New Haven, Conn.—p. 81.
Id. V. Basic Lead Acetate Precipitate. H. B. Vickery and C. G. Vinson, New Haven, Conn.—p. 91.
*Experimental Rickets. XXVI. Diet Composed of Purified Foodstuffs. E. V. McCollum, N. Simmonds, J. E. Becker and P. G. Shipley, Baltimore.—p. 97.
*Comparison of Concentrations of Inorganic Substances in Serum and Spinal Fluid. G. Hamilton, Boston.—p. 101.
*Extract Obtained from External Bovine Parathyroid Glands Capable of Inducing Hypercalcemia in Normal and Thyreoparathyroprivic Dogs. A. M. Hjort, S. C. Robison and F. H. Tendick, Detroit.—p. 117.
*Direct Precipitation of Calcium in Cows' Milk. C. S. Rothwell, New Haven, Conn.—p. 129.
Temperature Coefficients of Enzymic Activity and Heat Destruction of Pancreatic and Malt Amylases. D. H. Cook, New York.—p. 135.
Optical Activity of Cystine. J. C. Andrews, Philadelphia.—p. 147.
Oxidation of Cystine. J. C. Andrews, Philadelphia.—p. 161.
*Metabolism of Women. I. Variations in Fasting Blood Sugar Level and in Sugar Tolerance in Relation to Menstrual Cycle. R. Okey and E. I. Robb, Berkeley, Calif.—p. 165.
Metabolism of Sulphur. IX. Effect of Repeated Administration of Small Amounts of Cystine. H. B. Lewis, Ann Arbor, Mich.—p. 187.

*Loss of Bases in Diuresis and Its Effect on Alkali Reserve of Blood. B. M. Hendrix and D. B. Calvin, Galveston, Texas.—p. 197.
Catalytically Active and Inactive Forms of Ferric Oxid. L. A. Welo and O. Baudisch, New York.—p. 215.
Determination of Nitrate Nitrogen in Plants. R. C. Burrell and T. G. Phillips, Columbus, Ohio.—p. 229.
Possible Relationship of Arachidonic Acid to Saturated Fatty Acids in Fatty Acid Metabolism. L. G. Wesson, Baltimore.—p. 235.
Sulphur in Proteins. II. Effect of Mild Alkaline Hydrolysis on Hair. W. F. Hoffman, St. Paul.—p. 251.
Effect of Bacterial Flora on Biologic Test for Vitamin B. V. G. Heller, C. H. McElroy and B. Garlock, Stillwater, Okla.—p. 255.
Maintenance of Carbonic Acid Equilibrium in Body; Influence of Respiration and Kidney Function on CO_2, $H+$, HCO_3 and CO_3 Concentrations in Plasma. C. D. Murray and A. B. Hastings, New York.—p. 265.

Elimination of Sugars in Phlorhizin Diabetes.—A study made by Deuel and Chambers of the hourly elimination of extra glucose, fructose and galactose in fasting phlorhizinized dogs showed rates practically identical. Lactose, on the other hand, was excreted much more slowly, and less than 50 per cent. of extra glucose arising therefrom was recovered at the end of twelve hours. The glucose originating from fructose represents a 100 per cent. conversion from the carbohydrate ingested and was almost completely eliminated in five hours. The conversion of galactose to glucose has been shown to be nearly quantitative, 98 per cent. of the theoretical amount being excreted as extra glucose. A sparing action on nitrogen metabolism has been noted in each case in which there was increased glucose excretion irrespective of its source, although the glucose was not utilized and was quantitatively excreted.

Metabolism of Glycerol in Phlorhizin Diabetes.—A practically complete conversion of glycerol to glucose was noted by Chambers and Deuel in two phlorhizinized dogs. After the ingestion of 8.53 gm. of glycerol, 96.9 and 98.4 per cent., respectively, of extra glucose were recovered in the urine. A third dog yielded 55 per cent. conversion after ingestion and 70 per cent. after subcutaneous injection of glycerol. A decrease in the respiratory quotient from 0.703 to 0.678 after giving glycerol, indicates that there was no general oxidation of the ingested glycerol, which has a respiratory quotient of 0.86, nor of the glucose into which it was converted. The reduction in the respiratory quotient from 0.703 to 0.678 may be exactly accounted as due to the oxidation of the 2 atoms of hydrogen liberated in the reaction glycerol → ½ glucose. In the rate of excretion and the sparing of protein metabolism the reaction of glycerol was similar to that of the monosaccharids.

Blood Sugar Time Curves Following Ingestion of Dihydroxyacetone.—It has been shown by Rabinowitch that the diabetic is apparently able to tolerate dihydroxyacetone more readily than glucose. This substance has now been tested out in a number of cases of diabetes. When dihydroxyacetone is administered by mouth in proper dosage it has an insulin-like action in that it lowers the blood sugar. It is thus not only more readily tolerated than glucose by the diabetic, but actually has some influence on the metabolism of the carbohydrates already present in the body. Rabinowitch has substituted dihydroxyacetone for doses of insulin without, as previously, deducting a corresponding quantity of other carbohydrates from the diet.

Nutritional Anemia on Whole Milk Diet.—Rabbits limited to a whole milk (cow's) sodium citrate diet, Hart, Steenbock, Elvehjem and Waddell found will develop a nutritional anemia characterized by low hemoglobin and erythrocyte contents of the blood. Inorganic iron added to the basal ration will not per se correct this anemia. Inorganic iron in the presence of fresh cabbage or an alcoholic extract of desiccated cabbage or an alcoholic extract of yellow corn meal will prevent or cure such an anemia. These extracts are free from iron. Chlorophyll, free from iron, will also, in the presence of added inorganic iron, correct such an anemia as is induced by a whole milk-sodium citrate diet. The relation of these substances to vitamin E and to certain recent investigations on the nutritive properties of milk are discussed.

Betaine Fraction in Alfalfa Juice.—A fraction containing the quarternary bases has been obtained by Vickery from the juice of the alfalfa plant. This fraction contained 8.48 per cent. of the nitrogen of the protein-free juice of the plant (the "alfalfa filtrate") and nearly 81 per cent. of this nitrogen has been accounted for as stachydrine, chlorin, trimethylamine and betaine.

Experimental Rickets; Pure Foodstuff Diet.—In these experiments McCollum and his associates made use of a diet composed principally of purified foodstuffs for use with the "line test" for vitamin D studies. The formulas of two diets are given.

Concentration of Inorganic Substances in Serum and Spinal Fluid.—In a series of seventeen cases of epilepsy Hamilton found normal concentrations of chlorid, bicarbonate, inorganic phosphorus, total fixed base and calcium in serum and spinal fluid. The correlation between the chlorids in the serum and the chlorids in the spinal fluid was not very marked. A close relationship was found between the bicarbonates in the two fluids. The correlation between the values for calcium was fairly good and was somewhat less close between the values for inorganic phosphorus. Monovalent base showed about the same low degree of correlation as the chlorids and probably for the same reason.

Parathyroid Hormone Relieves Tetany.—Hjort, Robison and Tendick extracted a hormone from fresh bovine parathyroid glands by aqueous or alcoholic hydrochloric acid extractions which when given parenterally to dogs possesses the property of relieving tetany and inducing hypercalcemia.

Determination of Calcium in Milk.—Rothwell has devised a method of determining the calcium in cow's milk by direct precipitation with ammonium oxalate, without removal of protein.

Metabolism of Women.—On the basis of a total of more than 300 determinations of "before breakfast" blood sugar, covering forty-nine menstrual periods in twenty-six normal women, Okey and Robb state that there seems to be no ground for the conclusion that there is a consistant cyclic variation in the fasting blood sugar level in women. The average values observed during menstruation are slightly higher than those for the intermenstrual period. However, there are a greater number, not only of high values, but also of low values, during the menstrual period than at any other time. Hence, it is believed that, in making single determinations of blood sugar for purposes of clinical diagnosis, the time of the menstrual period should, in so far as possible, be avoided. This conclusion is borne out by a limited number (approximately fifty) of additional observations on subjects not to be rated as strictly normal physically.

Loss of Bases in Diuresis.—It has been demonstrated by Hendrix and Calvin that in diuresis due to sodium nitrate, sodium chlorid, sodium sulphate and urea, there is a loss of base through the kidney over and above that lost normally. Together with this loss of base in the urine, there is a marked fall in the alkali reserve. The loss of base is believed to be due to a failure of reabsorption from the tubules, since the tubules are flooded and overtaxed, and cannot be supposed to function as efficiently as normally in the retention of the basic ions. The effect of sodium nitrate diuresis on the alkali reserve is transient, passing off quickly, while the effect of sodium chlorid diuresis is more prolonged.

Journal of Experimental Medicine, Baltimore

42: 275-429 (Sept. 1) 1925

*Physiologic Ontogeny. A. Chicken Embryos. IV. Negative Acceleration of Growth with Age as Demonstrated by Tissue Cultures. A. C. Cohn and H. A. Murray, New York.—p. 275.
*Id. V. Rate of Heart Beat During Development of Chicken Embryos. A. E. Cohn, New York.—p. 291.
Id. VI. Differentiation in Chicken Embryo Heart from Point of View of Stimulus Production. A. E. Cohn, New York.—p. 299.
Antigenic Substance of Bacterial Cell. H. Zinsser and T. Tamiya, Boston.—p. 311.
*Etiology of Jagziekte. I. Primary Lesions. E. V. Cowdry, New York.—p. 323.
Id. II. Origin of Epithelial Proliferations and Subsequent Changes. E. V. Cowdry, New York.—p. 335.
*Immunologic Reactions of Isolated Carbohydrate and Protein of Pneumococcus. O. T. Avery and H. J. Morgan, New York.—p. 347.
*Antigenic Properties of Solutions of Pneumococcus. O. T. Avery and J. M. Neill, New York.—p. 355.
*Immunologic Relationship of Cell Constituents of Pneumococcus. O. T. Avery and M. Heidelberger, New York.—p. 367.

Immunologic Relationships of Streptococcus Viridans and Certain of Its Chemical Fractions. I. Serologic Reactions Obtained with Antibacterial Serum. R. C. Lancefield, New York.—p. 377.
Id. II. Serologic Reactions Obtained with Antinucleoprotein Serums. R. C. Lancefield.—p. 397.
*Compensatory Hypertrophy of Thymus in Rat. J. Marmorston-Gottesman and H. L. Jaffe, New York.—p. 413.
Bacteriophage of D'Herelle. II. Effect of Alcohol. J. J. Bronfenbrenner and C. Korb, New York.—p. 419.

Physiologic Ontogeny.—Observations made by Cohn and Murray on tissue cultures of heart muscle from chicken embryos indicate that, in general, the growth rate of the individual cells decreases with age. The negative acceleration of growth is greatest at the beginning of life as in the intact embryo. The latent period is greatest near the end of the incubation period, thus demonstrating that the factors determining the initiation of growth and those determining the extent of growth are not similar.

Rate of Heart Beat During Development.—This study by Cohn has made possible the presentation of a curve which shows distinctly that changes take place in the rate of the heart beat during the development of the chick embryo.

Etiology of Jagziekte.—Jagzietkte is a specific chronic catarrhal pneumonia of sheep which is peculiar to South Africa. The name is derived from the Dutch *Jagt*, to drive, and *ziekte*, a sickness, the combination of which is intended to indicate that the initial symptoms become first noticeable when the animals are driven for some distance. It is thought to be contagious and causes severe economic losses. An interesting feature of the disease consists of an extensive overgrowth of the pulmonary epithelium, but it is not known whether this proliferation constitutes the primary lesion nor has its tumor-like structure been studied. Cowdry describes the primary changes.

Immunologic Study of Pneumococcus.—Avery and Morgan assert that the isolated carbohydrate of pneumococcus is nonantigenic in the sense of stimulating antibody formation. The isolated protein of pneumococcus is antigenic: it induces the formation of antibodies which react with the nucleoprotein fraction of organisms of homologous and heterologous types. The antiprotein serums do not agglutinate type-specific strains of pneumococcus, or react with the carbohydrate derived from them.

Antigenic Properties of Pneumococcus.—Avery and Neill state that intact pneumococci, possessing specific antigenic powers unimpaired by cultural or other procedures, give rise to agglutinins for organisms of the homologous type and to precipitins for the type-specific carbohydrate derived from them. Solutions of pneumococci free of all formed elements, but containing the carbohydrate and protein of the original cell, fail to stimulate the formation of type-specific antibodies. Serums prepared in this manner do not react with the carbohydrate constituent of the cell and do not agglutinate organisms of the homologous type. The loss of this antigenic function is related to changes incurred during dissolution of the bacterial cell. Solutions of the cellular substances of pneumococcus, although lacking the specific antigen of the whole cell, induce the formation of antibodies reactive with pneumococcus protein regardless of the type from which the latter is derived.

Immunologic Relationship of Pneumococcus.—The general immunologic significance of the intact pneumococcus cell and of its protein and carbohydrate components are discussed by Avery and Heidelberger.

Compensatory Hypertrophy of Thymus.—Evidence of uncomplicated hypertrophy of the thymus was obtained by Gottesman and Jaffe by removing one lobe and studying the enlargement of the remaining lobe. The results clearly indicate that such hypertrophy takes place in young animals. They emphasize the functional importance of this gland before puberty, since the compensatory enlargement does not take place after puberty. The results further indicate that with the onset of involution there is a marked or almost total decline in the function of the gland, in spite of the fact that anatomically the thymus may persist to old age. With the appearance of a stimulus for regeneration, as suprarenalectomy, the involuted gland takes on functional activity.

Journal of Nervous and Mental Diseases, New York

62: 225-336 (Sept.) 1925

Pathology of Dementia Praecox. N. D. C. Lewis, Washington, D. C.—p. 225.
*Double Effect of Calcium on Vegetative Nervous System. E. Barath, Budapest, Hungary.—p. 261.
*Cerebrospinal Fluid in General System and Metabolic Diseases as in Nephritis, Diabetes, etc. B. J. Alpers, Philadelphia.—p. 265.
Case of Cervicomedullary Tumor. J. Favill, D. E. Faxon and D. A. Palmer, Chicago.—p. 279.

Effect of Calcium on Vegetative Nervous System.—Barath maintains that in contradiction to the results of experiments made on surviving organs, the effect of calcium on men is manifested in a double reaction: in the initial period there are strongly expressed symptoms of vagus excitement of short duration and these are followed by a less strongly expressed period of sympathetic excitement with longer duration increase of the blood sugar and blood pressure, sometimes epinephrin mydriasis, etc. The effect of calcium is an amphotrop effect, that is to say, an effect which manifests itself on both parts of the vegetative nervous system.

Cerebrospinal Fluid in Systemic and Metabolic Diseases.—A series of cerebrospinal fluids collected from the literature and from hospital reports form the basis of Alpers' report. In diabetes mellitus, sixty-five spinal fluids were studied. In 60 per cent. of the cases the cell content was normal, and in 40 per cent. either moderately or definitely increased. Most of the cases with an increased cell count, however, showed the presence of some complication, such as gangrene, tuberculosis, or pneumonia. The spinal fluid pressure was normal, and the protein content showed a slight increase in about 45 per cent. of the cases. Forty-one spinal fluids from cases of chronic nephritis without the presence of a uremia showed clear and colorless fluids in all cases. Most of these were cases of nephritis with hypertension. In 83 per cent. the cell count was normal, and in 17 per cent. it was definitely increased. In 30 per cent. a slight to a moderate increase in the protein content was recorded. The Wassermann, when done, was always negative. In uremia the spinal fluid changes are different from those in nephritis. In "pure" uremia the pressure is always elevated, the urea content is increased. In cases of "associated" or "secondary" uremia the amount and pressure of the spinal fluid are definitely increased, the cells are usually normal but may be increased, the chlorids are increased in amount, the albumen content is qualitatively normal and the urea content is elevated. Cases with a content of over 0.2 per cent. are rapidly fatal, and those with a content of from 0.1 to 0.2 per cent. show a severe retention and a fatal termination if not cared for. In jaundice the spinal fluid is occasionally yellow, probably in from 15 to 20 per cent. of the cases. Sixty-nine cases of gastro-enteritis showed no abnormalities in the spinal fluids. Cases of chronic endocarditis, chronic myocarditis, and subacute bacterial endocarditis showed no deviation from the normal in their spinal fluid findings. In twenty-one cases of lobar pneumonia without signs of a meningismus an increase in the cell count was noted in 13 per cent. of the cases. In eighteen cases of bronchopneumonia the cells increased in 33 per cent. of the cases. No other significant findings were noted. Twenty-five cases of pneumonia with signs of meningismus showed normal spinal fluid findings. In typhoid fever a hyperglycorrhachia had been reported, and also a decrease in chlorids. Fifty per cent. of the cases of pulmonary tuberculosis showed an increased cell content, but no other findings. Endocrine disorders were studied but no conclusions could be drawn from the few cases available for study.

Journal of Radiology, Omaha

6: 303-346 (Aug.) 1925

Do Roentgen Rays Cause an Indirect Stimulation? G. Holzknecht, Vienna, Austria.—p. 303.
High Voltage Roentgen-Ray Therapy in Gynecologic Practice. R. E. Fricke, Baltimore.—p. 304.
Mediastinal and Lung Tuberculosis. R. B. Breuer, Norton, Kan.—p. 307.
Skin Malignancies: Diagnosis and Treatment. L. Hollander, Pittsburgh.—p. 311.
Possibilities of Physiotherapy in Prevention and Treatment of Paralysis Following Anterior Poliomyelitis. E. B. Kessler, St. Joseph, Mo.—p. 318.

Direct Effect of Radium Irradiation on Leukocytes. R. G. Spurling and J. S. Lawrence, Boston.—p. 322.
Dermoid Cyst of Pleural Cavity. F. J. Schleier, Omaha.—p. 324.

Medical Journal and Record, New York

122: 309-368 (Sept. 16) 1925

Thoracic Pain. Relation to Visceral and Spinal Disease. G. Swetlow, New York.—p. 309.
Nonspecific Protein Therapy in Migraine, Epilepsy, Asthma and Hay-Fever. R. H. Spangler, Philadelphia.—p. 313.
Tryparsamide in Syphilis. W. C. Menninger, Topeka, Kan.—p. 318.
Cases in Which Test for Pancreatic Efficiency Has Been of Clinical Assistance. A. Bassler and J. R. Lutz, New York.—p. 321.
Office Gynecology. S. B. Schenk, Brooklyn.—p. 324.
Stasis, the Destroyer. A. C. Jordan, London.—p. 328.
Lethargic Encephalitis. W. M. Crofton, Dublin, Ireland.—p. 331.
Medicolegal and Sociologic Aspects of Epidemic Encephalitis. C. S. Potts, Philadelphia.—p. 335.
*Etiology of Epileptiform Convulsions. J. M. Nielsen, Battle Creek, Mich.—p. 338.
*Epilepsy, Type of Heredofamilial Degeneration or Abiotrophy. L. B. Alford, St. Louis.—p. 340.
Anxiety Neuroses and Allied Conditions. R. B. Tracy, Butte, Mont. —p. 342.
Teaching Mental Hygiene to Medical Students and Practitioners. T. A. Williams, Washington, D. C.—p. 345.
Some Uses of Insulin. J. F. Black, New York.—p. 347.
Brief Survey of Evolution of Therapeutics. C. G. Cumston, Geneva, Switzerland.—p. 349.

Etiology of Epileptiform Convulsions.—A series of 210 cases of epileptiform convulsions has been studied by Nielsen with a view of determining the etiologic factors. All points not comparable with recognized normal standards have been carefully compared with a series of 200 consecutive nonneurotic cases. No age is exempt. The curve of age incidence of the first convulsion shows three peaks, 20, from 30 to 35 and 50. The curve of symptomatic convulsion cases runs remarkably parallel to those of the idiopathic types. The male sex predominates in the proportion of sixty to forty in idiopathic cases and sixty-six to thirty-four in the symptomatic cases. The latter is apparently due to the greater incidence of arteriosclerosis, toxemias, etc., in males. Constipation is a marked predisposing as well as exciting factor or else epilepsy produces constipation. The basal metabolism in this short series is somewhat lower in epileptics than normal. Migraine headaches coexist with epilepsy in about 12 per cent. of cases. The finding of a small sella, thickened posterior clinoid processes or both occurs in about 39 per cent. of the cases of idiopathic convulsions and in about 28 per cent. of symptomatic convulsion cases. Blood sugar, blood pressure, hemoglobin content and differential blood count do not vary from the normal cases in epileptiform convulsions. Since the symptomatic cases show an age curve similar to that of the idiopathies hereditary taint, constipation, sella turcica pathology and possibly lowered basal metabolism, nearly as great as that shown by the idiopathics, it would appear that the symptomatics are potential epileptics "waiting for" an exciting cause. If this be the case, the "cause" of a symptomatic convulsion is merely the exciting factor in the case.

Epilepsy: Type of Heredofamilial Degeneration.—The contention is advanced by Alford that a great deal may be learned about epilepsy by considering it in relation to other nervous affections that seem to be of similar nature. The affections most similar to epilepsy appear to be the heredofamilial degenerations or abiotrophies, examples of which are the muscular atrophies and dystrophies, paralysis agitans, Huntington's chorea, progressive cerebral diplegia, myoclonus, dementia praecox, and other conditions. In these conditions the pathologic process is a degeneration of cells and fibers which arises from inborn weakness. In each condition a characteristic set of cells and fibers is involved. In epilepsy the convulsions are assumed to be representative of a type of extrapyramidal motor involvement and to be in series with tremor, chorea, athetosis and incoordination which are types of extrapyramidal disturbance found in others of the group of abiotrophies. The mental aspects of epilepsy are similarly considered to be comparable to the mental disturbances found in Huntington's chorea, cerebral diplegia and dementia praecox. The fundamental causative influence is heredity, although other processes may act in conjunction with heredity as it is now understood.

Military Surgeon, Washington, D. C.

57: 225-336 (Sept.) 1925

Historical Parallels at Coblenz. F. R. Keefer.—p. 225.
Use of Fish in Control of Yellow Fever in Peru. H. Hanson and L. H. Dunn.—p. 232.
Maxillofacial Centers. F. Lemaitre.—p. 242.
Some Medical Problems of Day. H. J. Nichols.—p. 256.
Flying Sense. V. T. Scott.—p. 265.
Study of Methods of Disinfection of Eating Utensils in U. S. Army, S. A. Moulton.—p. 268.
Preparation of Endo's Medium. N. MacL. Harris.—p. 280.
Basic Qualifications of Noncommissioned Officer. G. L. McKinney. —p. 286.

Nebraska State Medical Journal, Norfolk

10: 325-364 (Sept.) 1925

Indications for Open Operations in Fracture of Femur. A. F. Jonas, Omaha.—p. 325.
Fracture of Tibia. J. W. Duncan, Omaha.—p. 326.
Fracture of Patella. C. H. Waters, Omaha.—p. 327.
Fractures of Elbow. R. D. Schrock, Omaha.—p. 330.
Carpal Scaphoid Fractures. J. A. Weinberg, Omaha.—p. 332.
When to Operate in Fractures of Skull. J. J. Keegan, Omaha.—p 333.
What Roentgenogram Indicates. A. F. Tyler, Omaha.—p. 335.
Modern Aspects of Nutrition. V. E. Levine, Omaha.—p. 336.
Some Problems in Diagnosis. A. L. Cooper, Scottsbluff.—p. 342.
Acute Appendicitis in Children. A. W. Anderson, West Point.—p 347.
Pyuria. F. B. Young, Gering.—p. 35.
Congenital Hypertrophic Stenosis of Pyloris. J. A. Henske, Omaha. —p. 353.
Traumactic Laceration of Lung Without Injury to Parietal Pleuria: Case. E. A. Connolly, Omaha.—p. 356.

New Jersey Medical Society Journal, Orange

22: 323-366 (Sept.) 1925

Specific Test for Syphilis: Present Status of Kolmer's Complement Fixation Test for Syphilis as Established by a Critical Comparison with Numerous Other Methods. R. A. Kilduffe, Atlantic City, N. J.—p. 323.
Plastic Surgery. J. E. Sheehan, New York.—p. 338.
Dr. Coit and His Ideals. E. G. Wherby, Newark.—p. 341.
Treatment of Rhus Dermatitis with Poison Ivy Extract. R. O. Clock, Pearl Rive, N. Y.—p. 344.

New York State Journal of Medicine, New York

25: 889-920 (Sept.) 1925

Prostatectomy. Factors of Safety. P. Syms, New York.—p. 889.
Inhalation versus Regional Anesthesia for Prostatectomy. O. S. Lowsley, and H. E. Rogers, New York.—p. 893.
Present Status of Insulin Therapy. E. P. Joslin, Boston.—p. 901.

Northwest Medicine, Seattle

24: 407-468 (Sept.) 1925

Psychic Factors in General Medical Diagnosis. L. F. Barker, Baltimore. —p. 407.
Toxic Goiters of Adolescent Age. J. E. Else and B. Peden, Portland, Ore.—p. 413.
Exophthalmic Goiter; Etiology and Mental Symptoms. R. B. Tracy, Butte, Mont.—p. 416.
Thyroid Surgery. J. H. Garberson, Miles City, Mont.—p. 419.
Clinical Study of Thyroid Disorders. F. R. Menne, Portland, Ore.— p. 421.
Hypothyroidism. W. A. Taylor, Ellensburg, Wash.—p. 422.
Incidence of Rickets in Breast Fed Infant. G. J. Mohr, Seattle, Wash. —p. 430.
Porcupine Quill in Throat; Removal by Direct Laryngoscopy. J. G. Parsons, Lewistown, Mont.—p. 431.

Rhode Island Medical Journal, Providence

8: 141-160 (Sept.) 1925

Heart; Management in Hyperthyroidism. C. C. Sturgis, Boston.—p. 141.
Diphtheria Immunization in Providence. C. L. Seamon, Providence. —p. 146.
Health Adult—To Longer Life. C. H. Mayo, Rochester, Minn.—p. 147.

Tennessee State Medical Association Journal, Nashville

18: 61-88 (July) 1925

Liver Function. R. Caldwell, Nashville.—p. 61.
Osteomyelitis. H. G. Hill, Memphis.—p. 65.

Wisconsin Medical Journal, Milwaukee

24: 173-230 (Sept.) 1925

Surgical Diathermy in Treatment of Malignant Lesions of Buccal Cavity and of Skin. F. B. McMahon, Milwaukee.—p. 173.
How to Better Our Cancer Results. W. E. Ground, Superior.—p. 178.
More Hopeful View of Cancer with Special Reference to Gastric Cancer. K. W. Doege, Marshfield.—p. 185.
Precancerous Lesions and Early Carcinomata; Fulguration Treatment. T. W. Nuzom, Janesville.—p. 191.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 367-402 (Aug. 29) 1925

*Treatment of Asthma. W. L. Brown.—p. 367.
Eye Injuries and Interstitial Keratitis. W. T. H. Spicer.—p. 373.
Id. W. B. I. Pollock.—p. 375.
Visual Hallucinations in Sane People. A. W. Ormond.—p. 376.
Phlyctenular Conjunctivitis and Keratitis: Causes and Prevention. N. B. Harman.—p. 379.
Instrument for Recording Light Minimum and Light Difference. R. W. Henry.—p. 381.
Case of Perforating Wound of Eye, with Retention of Piece of Glass. R. Colley.—p. 382.
*Spheroidal Cell Carcinoma of Ovary in Child of Eight. O. Potter.—p. 383.
Recognition of Latent Jaundice During Treatment with Arsenobenzol Compounds. H. W. F. Williams.—p. 384.

2: 403-460 (Sept. 5) 1925

Choice of Medicine as Career. C. Buttar.—p. 403.
Public Health. H. Kenwood.—p. 404.

Treatment of Asthma.—Brown summarizes the treatment of asthma thus: Consider the psychic aspects of the case; remove sources of peripheral irritation, especially in the upper air passages; employ chest development exercises, especially in the young asthmatic, whose respiratory intake is usually poor; desensitize where practicable; restore the balance in favor of the sympathetic, and attend to the general hygiene.

Carcinoma of Ovary in Child.—Potter's patient, aged 8, had complained for four days of pain in the lower abdomen; it was constant and severe, increasing very much during defecation. For two days the lower abdomen had been seen to be swollen. A tumor was visible rising above the pubes to just below the umbilicus. It was firm to the touch and slightly tender. On rectal examination a mass was palpable in the pouch of Douglas. A tentative diagnosis of appendix abscess was made. At operation, a solid tumor was found, growing from the left ovary but extending to and enveloping the right. It was all encapsulated except the right extremity, which was fungating and becoming adherent to coils of small intestine. The tumor, with both ovaries and tubes, was removed. No other focus of growth was seen. On microscopic examination the tumor proved to be a spheroidal cell carcinoma. Twelve days after the operation enlarged glands appeared in the right groin and two days later in the left groin. A month later the child was readmitted with a tumor similar to the original one, and nodules, one of which was fungating through the wound in the abdominal wall. She died ten days later. Permission could not be obtained for a postmortem examination.

Calcutta Medical Journal

20: 463-510 (June) 1925

Treatment of Contracted and Ankylosed Joints. W. L. Harnett.—p. 463.
Tuberculous Cervical Glands. I. Bose.—p. 476.
Id. II. N. R. S. Gupta.—p. 480.
Nonspecific Therapy. A. Roy.—p. 483.

Indian Medical Gazette, Calcutta

60: 351-402 (Aug.) 1925

Treatment of Fractures of Elbow Joint. H. Halliday.—p. 351.
*Pharmacology and Therapeutics of Adhatoda Vasica (Basak). R. N. Chopra and S. Ghosh.—p. 354.
*Mercurochrome 220 in Treatment of Malaria. A. N. Kingsbury and K. Kanagarayer.—p. 355.
Cataract Extraction; 17,000 Operations. J. M. MacPhail.—p. 357.
*Excision of Pineal Body of Monkey Under Intra-Arterial Anesthesia. J. P. Ariand.—p. 360.
Treatment of Hemorrhoids by Strangulation and Snipping. D. R. Kehar.—p. 362.
Midwife in India. C. C. Murison.—p. 362.
Public Health Policy. W. C. Cross.—p. 366.
Application of Extension in Cases of Simple Fracture. P. C. Dutta.—p. 373.
Acriflavine in Otorrhea. S. N. Consul.—p. 374.
Retention of Urine Due to Hematocolpos. M. Alam.—p. 374.
Unusual Form of Pseudo Hernia. A. B. de Castro.—p. 375.
*Interesting Sign in Retrocecal Appendicitis. A. G. Tresidder.—p. 376.
Case of Obstructed Labor by Intra-Uterine Tumor. M. N. S. Chetti.—p. 376.

Adhatoda Vasica.—Chemical analysis of *Adhatoda vasica* shows the presence of two active principles: (*a*) an alkaloid, vasicine, and (*b*) traces of a volatile principle of the nature of an essential oil. Vasicine has no marked action on the alimentary canal or on the circulation. It produces slight but persistent bronchodilation in experimental animals and this effect is considerably increased after administration of atropin. Clinically, a fluid extract prepared from the leaves has well marked expectorant properties and relieves bronchial spasm.

Mercurochrome-220 in Treatment of Malaria.—Kingsbury and Kanagarayer report a case of benign tertian malaria in which a total of 0.3 gm. of mercurochrome-220 soluble was given over three days. On the withdrawal of acetylsalicylic acid and three days after the last mercurochrome injection a typical rigor occurred, with a temperature of 102.9 F. A malignant tertian case received a similar quantity of mercurochrome, and fever recurred two days after the last injection. The dye appeared to have little effect on the number of malaria parasites in the peripheral blood and caused no modification in their staining properties. In neither case did albuminuria develop. Kingsbury and Kanagarayer consider that the action of mercurochrome on malaria parasites is practically negligible, and that in view of the unpleasant sequelae which result from its exhibition, it should not be given in cases of malarial fevers.

Excision of Pineal Body Under Intra-Arterial Anesthesia.—Twenty c.c. of a 2 per cent. solution of gum acacia containing one-quarter grain cocain hydrochlorid and 5 minims of epinephrin hydrochlorid (1:1,000) was slowly injected into the lumen of the collapsed artery. After a lapse of five minutes the head and face were completely anesthetic. No signs of shock were noticed either during or after the injection.

Pathognomonic Sign of Retrocecal Appendicitis.—The sign referred to by Tresidder was the position of lying flat on the face and abdomen, thus allowing the cecum to fall away from the inflamed appendix and giving relief from pain.

Journal of Physiology, London

60: 237-346 (Sept. 4) 1925

*Length of Muscle; Heat and Tension Developed in Isometric Contraction. A. V. Hill.—p. 237.
Combination of Carbon Dioxid in Blood of Bull Frog. H. Wastl and A. Seliskar.—p. 264.
*Heat Production During Contraction in Which Work is Performed. W. Hartree.—p. 269.
*Coagulation of Blood Plasma When Divested of Corpuscles. J. W. Pickering and H. G. Reeves.—p. 276.
Composition of Alveolar Air at Extreme Heights. T. H. Somervell.—p. 282.
*Action of Insulin and Salts of Guanidine on Permeability of Mammalian Erythrocyte. I. J. Secker.—p. 286.
*Reduced Sensitivity to Insulin of Rats and Mice Fed on Carbohydrate Free, Excess Fat Diet. H. W. Bainbridge.—p. 293.
Spread of Activity in Tenuissimus Muscle of Cat and in Other Complex Muscles. E. D. Adrian.—p. 301.
*Effect of Circulation on Electrical Resistance of Skin. F. Aveling and R. J. S. McDowall.—p. 316.
Method for Perfusion of Kidney with Deoxygenated Blood of Known Oxygen Tension. E. W. H. Cruickshank and D. Orahovats.—p. 322.
Innervation of Smooth Muscle. II. Frequency of Nerve Impulses Entering and Leaving Superior Cervical Ganglion. H. O. Veach and J. R. Pereira.—p. 329.
Cellular Changes in Intestinal Fat. Absorption. W. Cramer and R. J. Ludford.—p. 342.

Length of Muscle and Heat Production.—Experiments are described by Hill by which the relation between heat production and length of muscle was determined over a range of lengths from about 50 to 140 per cent. of that of the resting unloaded muscle. The same effects were found for all temperatures and for all durations of stimulus.

Heat Produced by Muscle Contraction.—Fenn's result has been confirmed by Hartree that when a muscle shortens, doing work, and provided that the weight lifted is held up and does not bear on the muscle during relaxation, the energy liberated in the form of heat is constant, that is, it is the same as the heat liberated in an isometric contraction, and independent of the load. In such a contraction, therefore, the muscle supplies extra energy equal to the work done.

Blood Coagulation.—Because the blood plasma of the domestic fowl collected in paraffined tubes and centrifugalized in the cold contains all the material essential for clotting, it is concluded by Pickering and Reeves that blood coagulation can occur without the intervention of either thrombocytes or tissue juices. Lowering the surface tension of this plasma increases its tendency to clot, but does not provoke immediate coagulation.

Action of Insulin.—Quantitative chemical and microscopic evidence is given by Secker in support of the view that the mechanism of insulin is to increase the permeability of the cell membrane. Guanidin resembles insulin in its action of increasing permeability. The presence of calcium is essential for this action of guanidin.

Sensitivity to Insulin.—Bainbridge fed rats and mice on a diet containing protein, salts and vitamins, from which carbohydrate was omitted, the necessary calory value being maintained by an increased amount of fat. Such animals developed a high degree of resistance to insulin. Certain experiments make it appear probable that an increased amount of carbohydrate and complete absence of fat in the diet render the animals still more sensitive to insulin than they would be on a complete diet, but this cannot be considered to be definitely proved. The variations in sensivity are not due to deficiencies in the amount of vitamin A present. The evidence as to the importance of the thyroid glands is inconclusive.

Electrical Resistance of Skin.—It is shown by Avelling and McDowall that in the cat a fall of the electrical resistance of the skin is associated with the constriction of vessels and that a rise is associated with a dilatation. Reasons are put forward why the fall of skin resistance which occurs on sensory stimulation may be considered to be due to similar vasoconstriction. The resistance of the skin may apparently be used as an indication of its vascularity.

Journal of Tropical Medicine and Hygiene, London

28: 313-328 (Sept. 1) 1925

*Gongylonema. L. W. Sambon.—p. 313.
Nematode Parasites of Rabbits and Mice. H. A. Baylis.—p. 316.
Cultural and Biochemical Characters of Monilia Castellanii (Cryptococcus Castellanii) and Monilia Macroglossia (Cryptococcus Macroglossia). S. Re.—p. 317.

Gongylonema as Cause of Cancer.—The peculiar topographic distribution of cancer in Romagna, the prevalence of the disease in the esophagus and in the cardiac portion of the stomach, the constant presence of cockroaches, meal beetles and cellar beetles—all fosterers of the larval stages of *Gongylonema neoplasticum* in the houses where cancer cases had occurred, led Sambon to wonder whether *Gongylonema* might not be a factor in the causation of certain neoplasms affecting the upper portion of the alimentary tract of man, as is well known to be the case in rats infested by this spiruroid worm.

Lancet, London

2: 529-580 (Sept. 12) 1925

Treatment by Manipulation of Some Chronic Disorders of Knee-Joint Following Injury. A. G. T. Fisher.—p. 529.
Conservative Treatment of Fractures of Pelvis and Lower Extremity. W. I. de C. Wheeler.—p. 534.
*Experimental Treatment of Implanted Malignant Tumors of Rat. T. Lumsden.—p. 539.
*Chronic Nephritis with Possible Parathyroid Syndrome. C. R. Box and O. L. V. DeWesselow.—p. 543.
Yatren in Treatment of Amebic Dysentery; Results of Stovarsol in Certain Cases. P. H. Manson-Bahr and R. M. Morris.—p. 544.

Experimental Treatment of Implanted Malignant Tumors.—The tumors employed by Lumsden in this study were the mouse carcinoma (M. 63 of the Imperial Cancer Research Laboratory) and Jensen's rat sarcoma. In most cases the sarcoma was used because it was found that while M. 63 is very satisfactory for in vitro work, it is less suitable for experiments in vivo. It appears that an appropriate antiserum kills cancer or sarcoma cells in vitro, rapidly and invariably. It is much less toxic to the normal tissues than to the malignant cells. Pieces of cancer tissue kept in antiserum for from three to six days at 37 C. do not thereafter produce a progressive tumor when inoculated into the living animal. Jensen's rat sarcoma of the foot can be caused to disappear by repeated injections of antiserum into and round the tumor, along with temporary stoppage of circulation in the foot. After such removal of a tumor the rat becomes immune, so that a subsequent inoculation of Jensen's rat sarcoma into the other foot or into the axilla does not hold. When an implanted tumor is growing on each foot, removal of one of these by means of antiserum and constriction is, in a large proportion of cases, followed by absorption of the tumor in the other untreated foot. It is suggested that during absorption of the tumor after treatment with antiserum and constriction, the products absorbed from the attenuated or dying cells evoke a general active immunity which completes the cure and prevents subsequent grafts from holding. Such an antiserum might in this way prevent recurrence of a tumor after incomplete surgical removal.

Chronic Nephritis with Parathyroid Syndrome.—Box and de Wesselow report the case of a patient presenting definite evidence of chronic azotemic nephritis, and in addition an increased basal metabolic rate, a possible increase of sugar tolerance, and a recurrent laryngeal paralysis. On the chemical findings the most striking is the abnormally high calcium content of the serum. At one time it reached 20 mg. This extraordinary variation of what is usually one of the most constant constituents of the blood naturally suggests an involvement of the parathyroids. Such an involvement would be of the nature of a hyperplasia, since parathyroidectomy leads to a fall in the serum calcium. There appears, therefore, to be good evidence of a connection between chronic renal disease and parathyroid hyperplasia, and of the possibility of a mobilization of calcium salts in the condition.

2: 581-632 (Sept. 19) 1925

Some Disorders of Larynx. V. E. Negus.—p. 581.
*Immunity to Toxin of Streptococcus Scarlatinae. H. Henry and F. C. Lewis.—p. 587.
*Geographic Distribution of Heart Disease in England and Wales. M. Young.—p. 590.
Therapeutic Properties of Stovarsol. C. Levaditi.—p. 593.
*Luminal Poisoning. H. Carlill.—p. 596.
*Renal Glycosuria with Ketonuria. J. Patterson.—p. 596.

Immunity to Toxin of Scarlet Fever Streptococcus.—Henry and Lewis found that the serum of persons who are sensitive to small doses of toxin contain little or no antitoxin. On the other hand, the serum of resistant persons contains a measurable quantity of antitoxin, amounting to as much as 500 units. That this amount is considerable may be judged from the fact that the best of a series of horse antitoxic serums titrated against 20 units of toxin have given a unitage of about 800 on the same scale.

Heart Disease in England and Wales.—From the data that have been investigated by Young he concludes: (1) The mortality from heart disease in the counties of England and Wales shows quite definitely a tendency to a special distribution in which the higher death rates are found in the counties toward the west. (2) The geographic distribution of the relative mortalities in the periods examined is very different from that described by Haviland as occurring in data for an earlier epoch, and the explanation offered by him—namely, that the excessive incidence is found in counties that are distant from the sea and sheltered by their physical surroundings from the sea winds, cannot be held to account for the distribution of the fluctuations in incidence in the present data. A definite association exists in the counties between the distribution of mortality from organic heart disease and heart diseases in the aggregate and the mortality from acute rheumatism. The relative incidence of acute rheumatism appears to be the essential factor that determines the incidence of heart disease, although other factors, possibly mainly environmental, may have some influence on the rate of mortality in different districts.

Luminal Poisoning.—In the case cited by Carlill luminal and potassium bromid in small doses were prescribed but, inadvertently, 10 grains of the former and 50 grains of the latter were administered daily for twelve days. On the twelfth day, she became stuporous and had a recurrence of double incontinence. The pupils were much contracted and lost their reaction to light. At times there was a divergent squint. The pulse rate was increased. The cerebrospinal

fluid was under normal pressure. The urine contained no hematoporphyrin. After stimulation and a long delay she feebly obeyed certain instructions. Energetic treatment was employed in the form of strychnin, hot coffee by mouth and rectum, oxygen and faradism. The luminal and bromid were canceled. For a few days the periods of mental alertness increased in length but on each occasion she relapsed rapidly into stupor. Her conversation showed extreme confusion of thought. The tendon and superficial reflexes were unaffected throughout. The patient eventually recovered.

Renal Glycosuria with Ketonuria.—In Patterson's case the urinary examination was apparently contradictory to the findings based on blood analysis. The most striking feature was the continuous excretion of acetone bodies, a fact not merely based on a positive reaction but confirmed by more conclusive tests. The withdrawal of carbohydrate in the form of potatoes from the diet, or on the other hand, the addition of glucose, had no appreciable effect. The appearance of a ketonuria in these circumstances is evidently contrary to the present-day theories as to the relationship between carbohydrate and fat metabolism, unless it be assumed that in addition to a very low threshold for sugar the patient had also a lowered threshold for acetone. Unfortunately, it was not found possible to carry the investigation further in order to establish whether this were so or not, but since the abnormality cannot be accounted for on the basis of lack of carbohydrate utilization, it seems feasible to suggest that its cause is a parallel one to that responsible for the abnormality of the accompanying sugar excretion.

Medical Journal of Australia, Sydney

2: 213-244 (Aug. 22) 1925

Metabolism in Relation to Disease. F. S. Hansman.—p. 213.
Definition of Normal Labor; Cause of Pain in Labor. M. C. de Garis.—p. 222.
Radical and Conservative Treatment of Salpingitis. R. H. Morrison.—p. 225.
Iodin as Component of Very Young Infant's Diet. H. L. Kesteven.—p. 226.
Torsion of Normal Fallopian Tube. R. M. Allan.—p. 227.

Practitioner, London

115: 165-232 (Sept.) 1925

Stone in the Bladder. T. C. Evans.—p. 165.
Treatment of Compound Fractures. C. H. Fagge.—p. 179.
*Middle Ear as Source of Chronic Septic Absorption. E. Watson-Williams.—p. 185.
*Dosage of Insulin. P. J. Cammidge.—p. 190.
Anesthetics for General Practitioners. C. T. W. Hirsch.—p. 198.
*Colon Bacillus Infections. A. B. Rooke.—p. 205.
*Ultimate Fate of Disused Portions of Intestine After Complete Short-Circuiting Operations. J. L. Stretton.—p. 215.
Ophthalmic Signs in Common Nervous Diseases. W. F. Stiell.—p. 218.
*Treatment of Acute Rheumatism and Its Allies. J. Wishart.—p. 225.

Middle Ear Infection.—In every case of chronic disease in which it is suspected that septic absorption from some local source is a factor, Watson-Williams insists that the ears be examined. In every case of chronic otorrhea, when the matter of operative treatment is under consideration, regard should be had, not only to the local conditions, but also to the actual or possible results on the general health of septic absorption.

Dosage of Insulin.—Cammidge says that if the best results are to be obtained from the insulin treatment of diabetes, once it has been decided on, the dose is a matter of great importance, for too little will not stay the progress of the disease, whereas too much may have disastrous consequences. Many factors enter into the determination of the optimum dose, and since they are never exactly the same in any two instances, each case is a law unto itself; but if the conditions existing are accurately ascertained for each patient, it is possible to secure very satisfactory results with comparatively small doses, even in seemingly severe cases, and, further, a reduction is often possible, as influences interfering with the full physiologic effect of the insulin administered are eliminated or minimized by suitable diet and treatment.

Colon Bacillus Infections.—Rooke is of the opinion that colon bacillus infection is extremely prevalent, and is the cause of a great deal of chronic ill health. The stage of invasion is usually ushered in by an acute febrile illness, but it may be insidious in its onset. The condition tends to become chronic. Relapses or reinfections are the rule rather than the exception. The majority of cases are associated with colitis. Gross lesions, such as appendicitis, cholecystitis and renal infections, are extremely common. Toxic manifestations, such as irregular heart action, mental depression, and derangement of the thyroid, frequently occur. Treatment must be directed toward (1) improving the condition of the intestine, and (2) increasing the patient's resistance. In order to prevent the disease from becoming chronic, treatment must continue for a long period after all signs and symptoms have cleared. It is as necessary for the *B. coli* infected patient to have the urine examined from time to time as it is for the syphilitic to have repeated Wassermann tests.

Fate of Disused Portions of Intestine.—Five years ago Stretton performed a complete short-circuiting operation on a woman, aged 31. He divided the ileum 12 inches from the ileocecal valve, closed the distal end, and planted the proximal end to the sigmoid flexure of the colon. He divided the colon above the anastomosis and closed both the cut ends. The patient made a good recovery and was able to perform her household duties. When he saw her again in 1925, she was suffering from acute distention of the abdomen. At operation it was found that the distention was caused by an enormous dilatation of the disused portion of colon. Stretton asserts that this is the only case of its kind on record. Usually the disused portion of bowel remains quiescent, and gives rise to no trouble.

Treatment of Tonsillitis.—Wishart treats each attack of tonsillitis as if it were premonitory to an attack of rheumatic fever. With the aid of an atomizer or throat brush he applies to the tonsils, during gentle expirations, a paint consisting of one part of tincture of iodin to seven parts of anesthetic ether, until the tonsils become iodin colored and dry. It may be found necessary to repeat the application every third day.

Annales de l'Institut Pasteur, Paris

39: 565-640 (July) 1925

The Spirochete Which Causes Mumps. Y. Kermorgant.—p. 565.
*Resistance of the Galeria Bee-Moth to Tuberculosis. Metalnikoff.—p. 629.
*Rapid Preventive Treatment of Rabies. A. Hempt.—p. 632.

Natural Immunity of the Galeria Against Tuberculosis.—Metalnikoff found that the caterpillars of *Galeria melonella* were refractory to enormous doses of tubercle bacilli, even during their chrysalis phase. The same resistance to tubercle bacillus infection was manifest in the chrysalis and in the moth stage. Microscopic examination of blood and sections revealed that the natural immunity of the galeria to tuberculosis was due exclusively to phagocytosis. The same results were obtained with human, bovine and avian tubercle bacilli.

Rapid Ether Method for Antirabies Treatment.—Hempt asserts that by inoculations of fixed virus, treated with ether, the subject can be immunized against rabies in three or four days in mild cases; in five or six days in grave cases. He used an emulsion of ether-treated virus diluted with saline. In adults 1 or 2 gm. of the nerve substance were injected in mild cases; 3 gm. when the conditions were grave, and 4 gm. in the very grave. In mild cases, the treatment started by injections of brain emulsion. For children, the dose of vaccine corresponded to their age and weight. The injections were given twice a day. Of 6,000 persons given this treatment during the last three years, only two died during the treatment and one in the first fifteen days' interval.

Annales des Maladies Vénériennes, Paris

20: 561-640 (Aug.) 1925

Priority for Malaria Treatment of General Paralysis. M. Ikhtemann.—p. 561.
*The Colloidal Benzoin Reaction. A. Starobinsky.—p. 566.
Local Complications from Bismuth Injections. R. Barthélemy.—p. 570.
Gonorrhea and Hypochondria. R. Benon.—p. 578.
Primary Syphiloma in Urethra. Jamain.—p. 591.
Gonococcus Infection by the Mouth. Carle.—p. 593.

The Colloidal Benzoin Reaction.—The results of the test harmonized with those of the Wassermann test in 86.9 per cent. of Starobinsky's 516 cases. The benzoin test seemed to be the more sensitive of the two in patients with latent or

visceral syphilis. In eleven cases of suspected syphilis, the test was positive while the Wassermann was negative. The pronounced specific character and easy reading of the results render the benzoin test, he says, at least valuable in controlling and completing the complement fixation reaction if not capable of replacing it entirely.

Annales de Médecine, Paris

18: 87-165 (Aug.) 1925

Venous Tension in Varices. M. Villaret et al.—p. 87.
*Cholesterol in Diabetes with Arteritis. M. Labbé and Heitz.—p. 108.
Present Status of Bacteriophage Treatment of Typhoid. Lévy.—p. 136.
*Glycemia and Cholesterolemia. Landau et al.—p. 143.
Lactic Acid in Blood of Diabetics. Collazo and Lewicki.—p. 153.

Cholesterolemia in Diabetics with Arteritis Obliterans.—Labbé and Heitz' conclusions are based on nineteen observations. The exaggerated amount of cholesterol in the blood of these patients does not seem to be connected with liver disturbances, albuminuria, the arterial pressure or syphilitic lesions. Cholesterolemia is more pronounced in grave cases with acidosis, or with deficient permeability of the arteries, coinciding with reduction or abolition of the oscillometer findings. The cholesterol content is particularly high in diabetics affected simultaneously with aortitis and arteritis. Arterial obliteration in diabetes is due to localization of cholesterol in the tunica intima. While sodium citrate did not display any action on the cholesterol content, insulin markedly reduced its amount.

The Relations Between the Sugar and the Cholesterol Content of the Blood.—Landau and his co-workers' investigation in sixteen persons indicated that food rich in cholesterol and free from carbohydrates increased the content of sugar and cholesterol in the blood. Epinephrin injection or ingestion of a large dose of sugar, raising the glycemia curve, reduced the cholesterolemia. Hunger increased the cholesterol content of the blood within the first thirty-six hours, while lowering the glycemia.

Bulletin Médical, Paris

39: 947-974 (Aug. 29) 1925

*Multiple Sclerosis: Early Diagnosis. R. A. Marquézy.—p. 953.
Idem: Ophthalmologic Signs. Lagrange and Marquézy.—p. 957.
Idem: Etiology. R. A. Marquézy.—p. 960.

Early Diagnosis of Multiple Sclerosis.—Marquézy has observed transient difficulty in sewing or in writing, or chilliness of one foot or paresthesia as the first symptom of sclerosis in patches. One patient had these attacks in an extreme form nearly daily for seven months; then there was an almost complete respite for two years. Other patients complained of progressive or sudden reduction of vision, but it was always transitory. Others of heaviness of the legs, or vertigo, the room turning around the subject, but no nausea. Sudden movements of the head, fatigue or emotional stress may bring on these symptoms. Urinary disturbances were noted early only in about a third of his patients, and never as a very early symptom. The repetition, the intensity and the grouping of these mild symptoms are characteristic. He has also had exceptional cases that began with acute hemiplegia, subsiding in a few weeks. The age, 18 to 30, is significant, as also the wavelike character of the disturbances. The colloidal benzoin test was positive with spinal fluid in 63 per cent. of twenty-seven cases; the Wassermann negative.

Comptes Rendus de la Société de Biologie, Paris

93: 303-392 (July 10) 1925. Partial Index

Albumoses in Blood and Urine in Catarrhal Jaundice. Chevallier.—p. 303.
*Preparation of Silica Agar for Cultures. M. Souleyre.—p. 306.
Intestinal Flora in Artificially Fed Infants. Tissier and Dreyfus.—p. 308.
Arsenic in Placenta After Neo-Arsphenamin. Dejust and Vignes.—p. 314.
Structure of Cartilage Cell. Parat and Godin.—p. 320.
*Glucose and Phosphorus of Blood in Vitro. Bierry and Moquet.—p. 322.
Acidosis Test in Nephritis. H. Bierry et al.—p. 325.
Acid-Base Balance in Hyperpnea. Targowla et al.—p. 330.
*Complications of Injection of Human Serum. Debré and Bonnet.—p. 331.
*Immunization of Guinea-Pigs. Brocq-Rousseu and Urbain.—p. 333.
*Effect of Spartein on Dogs. F. and L. J. Mercier.—p. 338.
Effect of Starvation on Gonads of Tadpoles. J. Arager.—p. 342.
Chronaxia in Muscle Degeneration. G. Bourguignon.—p. 348.
*Trinitrin and Amyl Nitrite. L. Payan and E. Giraud.—p. 351.
Local Hyperleukocytosis from Vaccination. Costa et al.—p. 354.
*Convalescents' Serums. S. Costa and L. Boyer.—p. 355.
Cheynes-Stokes Respiration in a Fish. J. Cotte.—p. 362.
*Action of Bile on Paratyphoid Infection. F. Venulet.—p. 366.
Immunization Against Diphtheria. Brokman and Sparrow.—p. 368; p. 371.
Nonprotein Nitrogen in Diabetic Coma. Petrén and Odin.—p. 375.
Glycemia in Prognosis of Diabetes. H. Malmros.—p. 377.
Kottmann Test in Psychoses. Cernautzanu-Ornstein.—p. 387.
*Uremia in Scarlet Fever. M. Ciuca and F. Nadejde.—p. 389.

Method of Preparation of Silica Agar for Bacterial Cultures.—Souleyre describes the technic for rapid preparation of a silica gel by elimination of the silicate base under the form of insoluble potassium bitartrate.

Glucose and Phosphorus of Blood in Vitro.—Bierry and Moquet's experiments indicated a continuous decrease of glucose in blood kept in the thermostat. The phenomenon, especially marked in the second half hour, was accompanied also by diminution of the inorganic phosphorus. The disappearance of the glucose as well as of the phosphorus was accelerated when insulin was added to the blood.

Complications with Subcutaneous Injections of Human Serum.—Debré and Bonnet have injected over 1,100 children with serum against measles, whooping cough and mumps—a total of 7 liters of human serum. Complications occurred in about 2 or 3 per cent.—a local redness with edema appearing within the first hours and persisting one or two days. This was associated sometimes with fever and general malaise. The phenomena seem to be analogous to those from reinjection of horse serum in already sensitized subjects.

Vaccination by the Skin Against Anthrax.—Brocq-Rousseu and Urbain conclude from their experiments on eleven guinea-pigs that skin vaccination against anthrax confers immunity including all the organs. The animals proved resistant to several times the fatal dose of the virus, injected into the brain directly or through the orbit.

Action of Spartein on Heart and Arterial Pressure in Dogs.—In the Merciers' research on dogs, spartein sulphate increased the amplitude of the heart contractions without reducing the force of the myocardium. It retarded the cardiac rhythm to normal, but did not induce a permanent reduction of the arterial pressure.

Effect of Trinitrin and Amyl Nitrite on Venous Tension.—Inhalation of amyl nitrite caused in all five persons lowering of the venous tension, preceded in one case by brief hypertension. The action of trinitrin was analogous in seven cases: preceded by hypertension in three. Payan and Giraud ascribe the phenomenon to paresis of the sympathetic, with consecutive vasodilation; this was sometimes preceded by a short phase of vasoconstriction.

Advantage of Treating Serums from Convalescents with Formaldehyd.—Costa and Boyer add one part of 40 per cent. solution of formaldehyd to 2,000 parts of serum. With this method, complement fixation tests are unnecessary, since the syphilis spirochetes are destroyed by formaldehyd within a few hours. The immunizing action of the serum does not seem to be weakened, and the subcutaneous injection does not cause pain.

Influence of Ox Bile on Paratyphoid Infection in Rats.—Inoculation of the peritoneum with the paratyphoid B bacillus was fatal in rats, with ox gall injected simultaneously or three hours afterward. Further experiments with cultures on ordinary agar, or agar treated with bile, showed that the latter does not enhance the virulence of the paratyphoid bacillus, but it seems to reduce the resistance of the organism to the infection.

Uremia and Albuminuria in Scarlet Fever.—Retention of urea (from 0.05 to 0.2 per cent.) in the blood occurred in sixty-three of Ciuca and Nadejde's 108 patients with benign scarlet fever. In thirty-nine, neither albumin nor renal elements were present in the urine. In nineteen cases of nephritis with edema, complicating a mild form of scarlet fever, from 0.039 to 0.4 per cent. of urea was found in the blood. No albumin or renal elements were found in the urine of one patient. In twenty-one cases of grave scarlet fever, uremia existed in 97 per cent. while albuminuria appeared

only in sixteen. In four fatal cases the amount of urea in the blood was 0.2 per cent.; but there were no pathologic elements in the urine. Evidently the diet in scarlet fever should be based on the dosage of urea in the blood.

Journal de Chirurgie, Paris

26: 1-128 (July) 1925

*Surgery for Excessive Muscular Tonus. P. Wertheimer.—p. 1.
*Access to External Carotid. L. Hartglas.—p. 11.

Sympathetic Ramisection in Treatment of Rigidity and Contracture of Muscles.—Wertheimer reviews the history of attempts to cure pathologic rigidity of muscles by operative means, especially section of the rami communicantes for excessive plastic tonus. The research at Lyons (Leriche and Wertheimer) and the work of Hunter and Royle have demonstrated that this is not a dangerous operation, and that it has a solid physiologic basis, and opens a new field of surgery.

Ligation of External Carotid.—Hartglas calls attention to the internal jugular vein as a reliable guide to the site of the bifurcation of the carotid. This vein is readily palpated, and when drawn forward and inward it allows free access to a comparatively long extent of the carotid artery, unless enlarged glands obstruct the way.

Journal de Médecine de Lyon

6: 453-484 (Aug. 20) 1925

Galvanic Functional Tests of the Internal Ear. L. Bard.—p. 453.
Rupture of Vessels in Soft Palate. J. Garel and A. Gignoux.—p. 461.
Complications of Cancer of Esophagus. F. J. Collet.—p. 463.
*Adenoids and Vegetative System. Rebattu and Paufique.—p. 465.
Tonsillectomy in Rheumatism. R. Bertoin.—p. 471.
Radiotherapy in Otorhinolaryngology. H. Proby.—p. 475.

The Vegetative Nervous System in Children with Adenoids.—Rebattu and Paufique examined ninety-nine children with adenoid vegetations. The arterial tension was decreased in 70 per cent.; the oculocardiac reflex exaggerated in 63 per cent.; diminished in 4 per cent. and normal in 23 per cent. Epinephrin injections only exceptionally increased the arterial tension, but accelerated the pulse in 50 per cent. of the patients. Pilocarpin injections exaggerated the oculocardiac reflex in 50 per cent. of the children. Evidently subjects with adenoid vegetations present a disturbed vegetative system, chiefly characterized by irritability of the vagus. This may explain the accompanying asthma in several of the children.

Marseille Médical

62: 1305-1364 (Aug. 15) 1925

Lagrange's Treatment of Glaucoma in Children. Aubaret.—p. 1306.
Old Focus of Congenital Hemeralopia. Truc and Opin.—p. 1314.
Technic for Cataract Operation. Aubaret.—p. 1319.
The Slit Lamp for Examination of Cataract. D. A. Viterbi.—p. 1326.
Sympathetic Ophthalmia After Cataract Extraction. Truc and Dejean.—p. 1335.
*Hypotonia with Herpes Zoster of the Eye. J. Sédan.—p. 1338.
Healing of Eye Wounds and Postsurgical Astigmatism. Mastier.—p. 1346.
Origin of the Word "Trachoma." E. Paparcone.—p. 1352.
*Béranger's Cataract Operation in 1757. C. Fromaget.—p. 1354.
*Daviel's Operation for Cataract in 1745. Aubaret.—p. 1358.

Herpes Zoster of the Eye.—Sédan applied autohemotherapy in two cases with unilateral hypotension from zoster ophthalmicus. Eight subscapular injections were given at three day intervals. The first injection was of 5 c.c.; the second and third, 10 c.c.; the fourth, 15; the fifth, 20 c.c.; the last three from 30 to 35 c.c. of own blood. Rise of the intra-ocular tension and improvement of visual acuity were manifest after the fifth injection. Under this treatment the pain rapidly subsided and the zoster lesions on the cornea retrogressed. Each injection of the blood raised the tension for twenty-six to thirty hours. Vision was 8:10 to 9:10 three months later.

The Pioneers in Cataract Operations.—This issue of the *Marseille-médical* is devoted to ophthalmology in honor of the hundred and eightieth anniversary of the extraction of the opaque crystalline lens by Daviel in 1745. He came to Marseille in 1721 to help fight the plague, and was made chief surgeon to the hospital. Béranger, who introduced twelve years later the method of extraction of the cataract in the capsule, practiced at Bordeaux. A letter from Daviel describing his work is reproduced.

Paris Médical

57: 173-184 (Aug. 29) 1925

Diagnosis of Multiple Tumors of Spinal Cord. Cestan et al.—p. 173.
Amebiasis of the Bronchi. E. Yaloussis.—p. 181.
Improved Technic for Artificial Pneumothorax. L. Baillet.—p. 183.

57: 185-212 (Sept. 5) 1925

Ophthalmology in 1925. G. Cousin.—p. 185.
Paralytic Mydriasis from Belladonna. F. Terrien.—p. 191.
Scratches of the Cornea. A. Cantonnet.—p. 193.
Otorhinolaryngology in 1925. L. Dufourmentel.—p. 194.
Causes of Error in Examination of Vestibule of Ear. Winter.—p. 198
Clinical Significance of Nasal Polyps. P. Cornet.—p. 203.
Stomatology in 1925. L'Hirondel and Richard.—p. 205.
Local Treatment of Bismuth Line on Gums. Fargin-Fayolle.—p. 209.

57: 213-224 (Sept. 12) 1925

Mental Automatism and Hallucination Delirium. J. Lévy-Valensi.—p. 213.
Infectious Mastitis in Men. E. Bressot.—p. 222.

Presse Médicale, Paris

33: 1153-1168 (Aug. 29) 1925

*Spirochetes in Chancroid. Hudelo and Rabut.—p. 1153.
*Tumor of Stenson's Duct. J. Sénèque.—p. 1153.
Functional Mitral Stenosis in Exophthalmic Goiter. Bickel.—p. 1154.
*Lesions of Meniscus of Knee-Joint. E. Bressot.—p. 1158.
*Visualization of the Gallbladder. G. Sabatini and E. Milani.—p. 1160.
Dropsical Appendix and Gallbladder. Petrescu and Lazarescu.—p. 1161.

Association of Spirochetes in Chancroid.—Hudelo and Rabut noted coexistence of syphilitic infection in one of every seven in 173 patients with chancroid. They emphasize that association of Ducrey's bacillus with the spirochete of syphilis may not be detected for two months, since the incubation period of the latter is in certain cases prolonged, and a positive Wassermann reaction may not appear till late.

Occupational Tumor of Stenson's Duct.—Sénèque describes a gas tumor of Stenson's duct in a glass-blower employed for thirty-five years. The tumor completely disappeared under roentgen-ray treatment. Six exposures were given, to a total of about six hours. Ligature of Stenson's duct or avulsion of the auriculotemporal nerve should be tried only after irradiation has failed.

Treatment of Lacerated Semilunar Cartilage.—Bressot found injury of the semilunar cartilage in twelve cases out of thirty with trauma of the knee. The characteristic signs of the injury are recurring hydrarthrosis and pain inside the line between the articular cartilages. The lesion is usually an incomplete laceration of the internal cartilage. The operation of choice consists in removal of the entire fibrocartilage, after severing the internal lateral ligament. A cast is then applied for fifteen days. Three patients out of five, observed from four months to four years, recovered the normal use of the knee. The two with only partial meniscectomy were much improved but not quite cured.

Visualizing of the Gallbladder by Bromids.—Sabatini and Milani obtained a distinct picture of the gallbladder and gallstones after administration by the mouth of a single dose of 10-20 gm. of sodium bromid and strontium bromid, diluted in 100 or 150 gm. of water. Sometimes two doses of 10 gm. of the bromid were given at a four hour interval. Roentgenograms were taken from five to twelve hours afterward. The gallbladders were visible in 60 per cent. of healthy persons, and in over 80 per cent. of those with diseased gallbladders. The authors describe the details of the method, and reproduce instructive roentgenograms. They believe that the bromin is responsible for the success of the Graham-Cole intravenous tetrabromphenolphthalein technic. Ingestion by mouth of the bromids seems to answer equally well; bromin may be electively eliminated by the hepatic duct.

33: 1169-1184 (Sept. 2) 1925

*"Inapparent" Typhus Infection. C. Nicolle.—p. 1169.
Anesthesia in Obstetrics. P. Delmas and A. Roume.—p. 1171.
*Metabolism of Raw and Boiled Meat. Richet and Monceaux.—p. 1173.
Cholecystostomy as Emergency Operation. J. Berger.—p. 1174.
Fascia of the Pelvis. N. Barbilian.—p. 1176.

"Inapparent" Typhus Infection: Rôle of Inapparent Infections in Epidemics.—Nicolle refers to experiments on guinea-pigs and rats showing an afebrile form of typhus, without

clinical signs of the infection. The presence of inapparent typhus was confirmed by the virulence of the blood and organs, especially of the brain, from the animals. It represents an attenuated form of the disease while yet inducing immunity. The inapparent infection differs from latent infection, existing in bacteria carriers, which is a chronic condition. It is probable that such unrecognizable infection with whooping cough and measles may be responsible for certain epidemics.

Comparative Action of Raw and Boiled Meat.—Two dogs given meat, boiled for sixty minutes, eliminated 25 per cent. more urea; 52 per cent. more total nitrogen; 700 per cent. more chlorids and 20 per cent. more phosphorus than dogs fed with raw meat. The amount of eliminated water was also notably increased with boiled meat. Richet and Monceaux conclude that raw meat may be indicated in liver disease with a deficient protein metabolism and in diabetes insipidus, while boiled meat is preferable in nephritis with dropsy.

33: 1185-1200 (Sept. 5) 1925

*The Graham Test by the Mouth and Vein. Gosset and Loewy.—p. 1185.
Azoospermia from Congenital Syphilis. C. Simon.—p. 1188.
Anterior Poliomyelitis of Syphilitic Origin. Fribourg-Blanc and Jausion.—p. 1190.
Protein Therapy in Gastric and Duodenal Ulcers. Oury.—p. 1192.

Cholecystography.—Gosset and Loewy discuss the results of the Graham method for visualization of the gallbladder by intravenous injections of sodium tetrabromphenolphthalein in eighteen cases, and by sodium tetra-iodophenolphthalein, intravenously, in forty-eight cases, and by the mouth in twelve. With the substances ingested, the roentgen-ray picture of a normal gallbladder was hardly visible, while it was distinct in cholecystitis with calculi. The best results were obtained with tetra-iodophenolphthalein by the vein. While slight lesions of the gallbladder cannot be detected at the present time, an exact diagnosis with the Graham-Cole test may be counted on, they say, in an average of 85 per cent. of all other cases.

33: 1201-1216 (Sept. 9) 1925

Tumors of Frontal Lobe. L. Poussepp.—p. 1201.
*Skin Diseases with Nervous Disturbances. Lortat-Jacob.—p. 1204.
Surgical Forms of Thyroid Tuberculosis. P. Aubriot.—p. 1207.
Irradiated Food in Treatment of Rickets. L. de Gennes.—p. 1210.

Nervous and Psychic Disturbances Coexisting with Skin Diseases.—Lortat-Jacob describes three cases of eczema, associated with obsessions and melancholia in women, aged from 25 to 55. In one instance recurring eczema was connected with epileptic seizures; in another, an eruption of an impetigo and lichen type accompanied general convulsions in a child, aged 4. The affections appeared to be congenital and were probably of syphilitic origin. The infection may involve the ectoderm controlling the development and functioning of the nervous system. Arsenicals are indicated in these cases.

Revue Française d'Endocrinologie, Paris

3: 213-276 (Aug.) 1925

Passage of Secretion from the Pituitary into the Tuber-Infundibulum: Neurocrinia. R. Collin.—p. 213.
*Headache from Intracranial Hypotension. L. Cornil.—p. 229.
Embryology of the Pituitary in Birds. C. Pfeiffer.—p. 236.
Biologic Importance of the Lipoids of the Suprarenal Cortex. R. Porak.—p. 249.

Headache from Intracranial Hypotension.—Cornil does not refer to the transient headache after lumbar puncture nor to the hypotension from local sclerosis preventing production of cerebrospinal fluid. He describes three cases in which low blood pressure entailed such intracranial hypotension that severe and almost continuous headaches resulted. The low blood pressure in these cases was due to deficient suprarenal functioning, the result of a severe attack of influenza or the effect of mushroom poisoning or of deep radiotherapy of a fibroma. Other signs of suprarenal deficiency were prominent, some of the three women being confined to bed from the asthenia and pains in the lumbar and dorsal regions, spreading to the scapula and stomach. Two of the women displayed a slight tendency to pigmentation, and the headaches were of the meningitis type. In all the cases treatment with total extract of suprarenal banished the headaches at once; the general health improved more slowly. Suprarenal treatment, by raising the blood pressure, has a decidedly favorable action on this secondary headache from primary suprarenal insufficiency. Cornil adds that intraspinal injection of 1 c.c. of the suprarenal extract does not raise the pressure in these cases, but a rise in pressure by 30-40 per cent. is evident in four or five minutes after intramuscular injection. This confirms the assumption that arterial hypotension entails hypotension in the cerebrospinal fluid.

Schweizerische medizinische Wochenschrift, Basel

55: 817-840 (Sept. 3) 1925

The Diseases of the First Dentition Period. E. Feer.—p. 817.
Technic of Percussion. O. Amrein.—p. 820.
Chronic Paronychia. J. von Deschwanden.—p. 821.
Orthopedic Diseases of the Foot. M. Dubois.—p. 824.
Epilepsy of Genital Origin. J. S. Galant.—p. 830.
The So-Called Calomel Cure. L. Gelpke.—p. 833.

Pathologica, Genoa

17: 393-420 (Aug. 1) 1925

Changes of Leukemic Type in Blood of Rats with Tar Cancer. Balbi.—p. 407.
*Technic for Cultivation of Anaerobes. G. Vercellana.—p. 410.
Malformations of the Kidneys. G. Invernizzi,—p. 413.

Cultivation of Anaerobes.—Vercellana has modified Rockwell's pyrogallic acid method. Instead of pouring the acid on the cotton plugging the tube with the culture—which has certain disadvantages—he puts the pyrogallic acid in an Erlenmeyer jar below the culture. The agar is poured into a bottle to form a thin coating throughout the bottom of the bottle. This is inoculated with the micro-organism; the flask is then inverted, and the mouth is introduced into the mouth of the Erlenmeyer. The junction is made air-tight with shellac. He has cultivated in this way the bacillus of tetanus and of malignant edema, using in the jar 50 c.c. of a 10 per cent. solution of potassium hydrate and 5 gm. of pyrogallic acid, instead of Rockwell's mixture. Two test tubes can be used in the same way, shellacking the two mouths together. They can be separated by holding the shellac over a flame.

17: 421-448 (Aug. 15) 1925

Iron-Containing Cells in the Ovary. Puccinelli.—p. 433.
Medical Geography of Somalia. E. Corrado.—p. 438.
Basal Metabolism During Work and Fatigue. Caccuri Scipione.—p. 441.
*Salpingography. C. Vercesi.—p. 442.

Visualization of Fallopian Tubes.—Vercesi reproduces a roentgenogram taken after injection of iodized oil through the tubes. The flaring out of the shadow beyond the farther end of the tube is evidence of its permeability. He never witnessed any untoward by-effects from the use of this 40 per cent. suspension of iodin in a vegetable oil.

Clinica Pediatrica, Modena

7: 449-512 (Aug.) 1925

*Habitual Vomiting of Breast-Fed Infants. Cozzolino.—p. 449.
Nontuberculous Chronic Bronchopulmonary Affections in Young Children. G. Salvioli.—p. 476.

Habitual Vomiting in Breast-Fed Infants.—Cozzolino's experience confirms the prompt benefit from giving the infant one or two teaspoonfuls of a thick gruel or potato purée a few minutes before each suckling. He gives the details of fifteen cases in which this thick feeding promptly arrested the tendency to vomit. Only two required a little atropin in addition to conquer the gastric neurosis. He sometimes ordered moist heat to the stomach after nursing. The weight of the heavy gruel tends to break up the bad habit that has been acquired by the peristolic reflex. The success of this dietetic treatment is a touchstone to exclude a syphilitic or anaphylactic basis.

Policlinico, Rome

32: 1207-1237 (Aug. 31) 1925

*Fever in Secondary Syphilis. G. Antonelli.—p. 1207.
Iodized Oil in Roentgenology of the Pleura. P. Cignolini.—p. 1213.
"Aplasia of Suprahepatic Vein." Silvestri.—p. 1214. Reply. Bastai.—p. 1215.

Syphilis Simulating Malaria.—The young man presented fever every evening, beginning forty days after discovery of

a primary chancre. A chill for a few minutes preceded the fever which reached 38 to 40 C. and terminated with a sweat as the night advanced. Headache accompanied the fever, and in time there were pains in the sternum and tibias. There was a four plus Wassermann reaction, and the spleen was not enlarged. After nearly four months of this pseudomalaria, the fever was arrested by a single injection of neoarsphenamin, after it had been returning for four months. Antonelli adds that women are more subject than men to essential secondary syphilitic fever. In his case there did not seem to be any manifestations of the syphilis outside of the fever, although skin and mucosa were repeatedly examined, but there was intense monocytosis, with relative lymphocytopenia and a tendency during the fever to nervous disturbances of a hystero-epileptiform nature such as had been observed years before on very rare occasions. He accepts this case as confirming Levaditi's theory of the distinction between the dermotropic and the neurotropic spirochetes.

32: 1239-1272 (Sept. 7) 1925

*Leukemia After Trauma. M. Martinelli.—p. 1239.
*Connection Between Trauma and Cancer. F. Speciale.—p. 1241.
*Rheumatic Nephritis. V. Vanni.—p. 1243.

32: 1273-1307 (Sept. 14) 1925

Hematogram in the New-Born in Health and Disease. Pollitzer.—p. 1273.
Cold Abscess of the Tongue. G. Fantozzi.—p. 1282.

Leukemia Following Trauma.—The man lost consciousness when hit in the chest by a log, but no fracture resulted and there was no vomiting or internal hemorrhage, only progressive weakness for three weeks, then bleeding from the gums. Blood changes indicating myeloid leukemia were followed by death, one month after the trauma. A recent second similar case of acute fatal leukemia after a trauma, and four that Martinelli has found on record raise the query whether the accident insurance companies were justified in refusing to accept a causal connection between the trauma and the acute fatal leukemia.

Connection Between Trauma and Cancer.—Speciale adds another case to the long list in which a sarcoma developed in the limb which had been injured not long before. The first symptoms of the malignant disease were noted a week after grave trauma of the ankle. There was no question of accident insurance in this case.

Rheumatic Nephritis.—In Vanni's case, the young man developed, twenty days after an infectious sore throat, severe pains in muscles and joints with hematuria and casts in the urine. Under salicylate treatment, the whole clinical picture promptly subsided, including the symptoms of nephritis.

Riforma Medica, Naples

41: 721-744 (Aug. 3) 1925

Peptic Ulcer in Meckel's Diverticulum. G. Pascale.—p. 721.
*Cancer in Upper Air Passages. S. Citelli.—p. 724.
*Oxaluria. F. Piccininni and E. Lombardi.—p. 726.
*Contamination Meningitis. G. de Toni.—p. 729.

Cancer in the Upper Air Passages.—Citelli has encountered forty-five cases of this kind, since 1918, in his ear, nose and throat clinic. Over half of them were under 50; the youngest was a boy of 12 with a carcinoma in the maxillary sinus. Citelli accepts the increasing prevalence of cancer, and especially that of the upper air passages, as an argument in favor of a parasitic origin. Metastasis was common and early.

Oxaluria.—Piccininni and Lombardi present data collected independently which demonstrate that a special strain of the colon bacillus sometimes acquires the property to produce oxalic acid. This strain continues to produce oxalic acid in the test tube, and also in persons free from oxaluria who ingest cultures of this strain; more or less oxalic acid then appears in their urine.

Meningitis from Contamination.—The meningococci in the infant's spinal fluid were concealed by the luxuriant growth of a saprophyte accidentally introduced, possibly by the physiologic solution sold for injection purposes.

Rinascenza Medica, Naples

2: 297-320 (July 1) 1925

The Reticulo-Endothelial Apparatus. A. Fortunato.—p. 297.
Sarcoma in Child Kidney. R. Jemma.—p. 299.
Case of Familial Splenic Anemia. V. Tramontano.—p. 301.
Pruritus in Tabes. A. Oro.—p. 303.
*Milk Protein Therapy in Eczema. N. De Sanctis.—p. 307.
Spirochetes and Spirochetosis. M. Musella.—p. 308.

Parenteral Protein Therapy of Eczema in Infants.—De Sanctis has been treating eczema in thirty infants with intradermal injection of 2 c.c. of the same milk used repeated every second day or at longer intervals. Four of the infants were artificially fed, the others breast fed. Even after a single injection, in some of the children, the discharge dried up and no new lesions developed. Four injections usually completed the cure. He applied this "homologous galactotherapy" intradermally in order to utilize the defensive forces in the skin. He regards it as the simplest and most successful treatment for milk crust in infants, while it avoids all the inconveniences and dangers of local measures. One infant was in an extremely debilitated condition, the eczema involving the entire body, but it recovered completely with ten injections in thigh or buttocks of the mother's milk. No appreciable by-effects were observed except in one case in which there seemed to be an actual transient colloidoclastic shock.

Anales de la Facultad de Medicina, Montevideo

10: 307-394 (April) 1925

High Shoulder: Congenital or Acquired. J. Cunha.—p. 307.
*Alternating Regular Heart Beat. A. Alvarez Mouliá.—p. 332.
Wounds and Disease of the Patella. D. Prat.—p. 348.
Case of Subacute Tetanus. J. C. Del Campo.—p. 357.
*Sexual Enlightenment of the Young. N. Leone Bloise.—p. 361.

Case of Alternating Regular Heart Beat.—Alvarez Mouliá gives eleven tracings of the alternating ventricle and auricle beat without extrasystoles. The wave in both the cardiogram and the jugular pulse showed the alternating auricle beat plainly.

Sexual Enlightenment of the Young.—Leone Bloise pleads for systematic handling of this subject by the parents, in the school and university, and by the family physician, as occasion presents. The father answering the questions of the little child in their walks begins this sexual enlightenment, and the teacher, the school physician, the senior medical students should assemble the fathers of the children to prepare them for this task, and continue it themselves later. He has been carrying on such work himself for eight years, and states that some of his earliest disciples recently expressed anew their perennial gratitude for his talks and guidance in sexual hygiene.

Archivos Españoles de Pediatría, Madrid

9: 385-448 (July) 1925

*Plastic Operations on Children. V. Juaristi.—p. 385.
*Fatality from the Persisting Thymus. J. L. Morales.—p. 392.
*Nasal Pruritus in Meningitis. G. R. Lafora.—p. 398.

Remote Results of Plastic Operations.—Juaristi gives illustrations of three adults operated on in childhood, with deplorable ultimate results. In one young man, after an operation at the age of 3 for osteomyelitis of the maxilla, with extensive loss of substance, the ankylosis was almost complete. He removed the solid mass formed by the teeth that had interlocked as they grew. The dental prosthesis then provided was made with a bulging portion that tended to correct the extreme asymmetry of the lower part of the face. The case of extensive burn from waist to heel at the age of 8 had healed with cicatricial bands, and a large epithelioma in the dystrophia area has just been removed from the young woman.

Fatal Hypertrophy of the Thymus.—Morales' patient was a girl of 11 who had suddenly developed difficulty in swallowing, two months before, with attacks of suffocation especially at night, for which no cause could be discovered by auscultation, percussion or radioscopy, although there was slight inspiratory hissing, cyanosis, and tendency to syncope. Necropsy revealed a large thymus hidden behind the lungs, and he ascribes the symptoms to perverted functioning of

the persisting thymus, as there were no signs of mechanical compression. The fatal suffocation occurred notwithstanding that the child was wearing a large O'Dwyer laryngeal tube. He endorses Marfan's plea for treatment as for syphilis in such cases.

Itching of the Nose an Early Sign of Meningitis.—Lafora ascribes this early symptom to irritation of the trigeminal nerve with incipient meningitis of any kind.

Brazil-Medico, Rio de Janeiro

1: 287-300 (June 6) 1925

*Epinephrin Treatment of Glaucoma. G. de Andrade.—p. 287.
Sterilization of Instruments in Glycerol. E. Campos.—p. 291.

Epinephrin Treatment of Glaucoma.—De Andrade reviews the literature on this subject, and reports three cases of acute or subacute or simple glaucoma and a case of acute glaucoma in which he applied Hamburger's method of subconjunctival injection of epinephrin. The effect was uncertain and transient; at most it may serve to reenforce the miotic, or to tide along briefly until an operation is feasible. Any medical treatment, he says, has the disadvantage of misleading the patient to a false confidence that operative measures can be averted.

2: 29-42 (July 18) 1925

Structure and Reproduction of Bacteria. A. Fontes.—p. 29.
*Pathologic Physiology of Diabetes. Pimenta Bueno.—p. 31.

Pathologic Physiology in Diabetes.—Pimenta Bueno presents arguments to sustain the view that the fundamental and single cause of diabetes is the excessive excitability of the splanchnic sympathetic. This induces vasoconstriction of the capillaries in the liver, entailing hypotension of the interstitial plasma, with aspiration of glycogen from the interior. Almost any vagotropic substance would have the same effect; it is not peculiar to insulin. Under intramuscular injection of 2.5 gm. of peptone the glycosuria dropped from 0.31 per cent. to zero in one case described, and from 2.7 per cent. to 0.74 per cent. in another after 1 gm. of peptone. He gives charts to explain the mechanism of this functional trophodynamics—the intensity of function depending on the intensity of the blood supply, other things equal.

2: 43-56 (July 25) 1925

Clinical Aspects of Preventive Medicine. Annes Dias.—p. 43.
*Venomous Spiders. Vital Brazil and J. Vellard.—p. 47.
Case of Abscess of the Cornea. E. Campos.—p. 51.

Spiders as Enemies of Snakes.—Two species of Brazilian spiders are described, the poison of which kills snakes. These spiders fight serpents; their adult season is the season of the serpents' young.

Prensa Médica, Buenos Aires

12: 169-200 (July 20) 1925

*Neurofibromatosis with Suprarenal Deficiency. C. Mainini.—p. 169
*Generalized Edema as Early Sign of Gastric Cancer. C. Bonorino Udaondo and M. M. Casteigts.—p. 178.
Vagotonia and Dermographism in Parkinsonian Syndrome. M. R. Castex and A. F. Camauer.—p. 181.
Reconstruction of Nose. R. Pini and R. Becco.—p. 187.
Dermatosis and Syphilis. J. L. Carrera.—p. 190.

Recklinghausen's Disease with Suprarenal Deficiency.—Mainini is inclined to ascribe to a primary diffuse affection of the sympathetic system the intense neurofibromatosis with progressive asthenia and other signs of loss of suprarenal functioning. Necropsy failed to reveal any cause for the suprarenal deficiency beyond the neurofibromatosis, although the man had been addicted to alcohol and the Wassermann test was positive; there were no signs of tuberculosis.

Edema as Early Symptom of Gastric Cancer.—Vague dyspeptic disturbances in the woman of 46 and man of 36 were soon followed by edema in the legs which rapidly spread although nothing in heart or kidneys could explain the tendency to generalized dropsy. In about four months a small tumor became palpable in the woman's stomach, which rapidly developed intensely malignant features. In the man, the whole syndrome ran its course in two or three months. These cases of gastric cancer with anasarca as practically the first symptom can be differentiated only by exclusion. The cancer evidently induces a bilateral phlebitis by infection; the blood shows the type of cancer anemia. In these two recently observed cases necropsy failed to show any evidence of compression to explain the edema. There was repeated hematemesis in the second but not in the first case.

12: 233-272 (Aug. 10) 1925

*Thrombophlebitic Form of Banti's Disease. C. Alvarez.—p. 233.
The Digestive Period in Gastric Ulcer Studied by the Fractional Method. C. Bonorino Udaondo et al.—p. 242.
Alopecia Areata as a Sympathetic Affection. Castex and Camauer.—p. 250.
*Cancer. G. Fichera.—p. 262. Cont'd.

Form of Banti's Disease with Thrombophlebitis.—Alvarez' patient was a boy whose spleen had been slowly enlarging for seven years. There were six periods of sudden and profuse gastro-intestinal hemorrhages, with fever, and followed by ascites which was gradually resorbed each time. There were never any appreciable symptoms from the liver. The spleen grew smaller after each gastric hemorrhage. The boy is now 10, malnourished and anemic. Splenectomy was deferred in the early stages of the disease, and now it seems too grave to venture. Seven Argentine surgeons have reported a total of thirteen operative cases, but all proved fatal in a few days to a year with a single exception; this was Castaño's patient who is still in good health eight years later. Alvarez' case teaches, however, that hemorrhages and ascites do not indicate that the disease has already reached an inoperable stage. The hemorrhages may reveal merely the spleen thrombosis.

Cancer.—Fichera states that half a million persons die of cancer every year, and that Europe alone is responsible for 300,000, and North America for 95,000. England's figure is 45,000; France, 24,000; Italy, 27,000, and Argentina, 5,696. No climate or race is exempt, but women develop cancer at an earlier age than men, and the malignant disease attacks perferably organs in which there is exceptional cellular activity during their functioning. He thinks the alleged increased prevalence of cancer is more apparent than real, and is hoping much from the collective inquiry undertaken by the League of Nations.

Revista de la Soc. Arg. de Biología, Buenos Aires

1: 213-290 (June) 1925. Partial Index

*Autoreinfection of Hookworm. J. Bacigalupo.—p. 220.
*Polyuria After Hypophysectomy. B. A. Houssay et al.—p. 237.
*Casein in the Diet of White Rats. L. Savazzini.—p. 265.
Action of Insulin on Glycolysis in Vitro. O. Pico Estrada et al.—p. 275.

Autoreinfection of Hookworm.—A woman with extensive burns was constantly in the hospital for three years. She was treated for hookworm on admittance, and was apparently cured for three months. Then the ova reappeared in the stools, and were again banished. Again they reappeared after six months, and Bacigalupo then examined the finger-nail dirt, finding one normally developing ovum and two larvae. After the finger-nails were sterilized there was no further return.

Polyuria After Intracranial Lesion.—The pituitary was removed in toads or the infundibular region touched with a hot needle. This induced extreme polyuria, and the weight increased in toads deprived of the pituitary. The toad seems to be the only animal in which the secretion of the pituitary can be measured by the changes in the color of the skin.

Casein in the Diet of White Rats.—On the Osborne and Mendel complete ration (with 10 per cent. casein) the animals lost weight and developed anemia, as also when casein was given with other rations.

Revista de la Soc. de Med. Interna, Buenos Aires

6: 177-240 (June) 1925

Iodized Oil in Compressed Lung. A. A. Raimondi et al.—p. 177.
*Polyp Obstructing the Pylorus. P. Escudero.—p. 196.
Clinically Latent Stenosis of Pulmonary Artery. Beretervide.—p. 199.
*Vision of Own Retinal Circulation. E. P. Fortin.—p. 205.
Primary Pyopneumocyst in Liver. Escudero and Tobias.—p. 217.
*Case of Bronzed Diabetes. I. M. Hernández and M. Benarós.—p. 228.

Stenosis of the Pylorus from a Polyp.—Four years after mammectomy for cancer, pains in the epigastrium and oppres-

sion after eating were accompanied by biologic signs of cancer (retarded glycosuria and exaggerated autolysis in the urine) and evidence of stenosis of the pylorus. The stomach was removed, but no traces of cancer were found; the tests had been misleading. The obstruction at the pylorus was due to a minute polyp.

Direct Inspection in One's Own Eye of the Blood Corpuscles and Their Movements.—Fortin asserts that with the blue light of the mercury vapor lamp it is possible to behold the circulation in one's own retina as distinctly as articles seen through the best microscope. A blue sky or a snow field reproduces similar conditions to a very slight degree. He explains the mechanism of the phenomenon, and remarks that instead of saying "A man is as old as his arteries," it would be better to say "as old as the circulation in his retina," because he can gage that himself.

Bronzed Diabetes.—The man, aged 37, presents grave diabetes, hypertrophic cirrhosis of the liver and extreme bronzing of the skin, but there is no asthenia and the blood pressure is normal. Alcoholism is the only clear pathologic antecedent. With insulin he has been rescued twice from precoma, but the condition is slowly progressing. There are no indications of hemolysis.

Semana Médica, Buenos Aires

2: 165-220 (July 23) 1925

*Banti Syndrome from Congenital Syphilis. Acuña and Maggi.—p. 165.
*Sarcoma of Eyelid. P. Satanowsky.—p. 169.
Nontuberculous Induration of Right Apex in Case of Obstructed Nasal Breathing. Riccitelli.—p. 178.
Experiences with Fractures. R. V. Hernández.—p. 180.
Long Retention of Four Months' Fetus. J. Bazán.—p. 190.
Street Venders of Eatables. A. Casotto.—p. 192.
Special Features of Influenza in Infants. Llosa.—p. 193.

The Banti Syndrome from Congenital Syphilis.—Acuña and Maggi report a third case in which a girl apparently moribund from advanced Banti's disease recovered clinical health under treatment for the previously unsuspected or unheeded congenital syphilis. This improvement has persisted unmodified for six months to date. The girl is now 14. There had been evidently sclerogenous lesions of syphilitic origin in the viscera, with inflammation involving the peritoneum. The reds numbered 800,000, the whites 3,125, and there had been vomiting of pure blood on four occasions during the year and a half of the disease.

Sarcoma of the Eyelid.—Satanowsky gives an illustrated description of a case of melanic sarcoma of the tarsal conjunctiva successfully removed, the patient, a man, aged 60, and a case of subcutaneous leukosarcoma of the upper lid of a boy, aged 5. In this latter case the sarcoma continued its fatal course, notwithstanding two operations and roentgen-ray and radium treatment in the course of about eighteen months.

2: 221-276 (July 30) 1925. Partial Index

The Pelvic Sympathetic. C. F. Rophille.—p. 221.
Definition of Permanent Hypertension. J. R. Goyena.—p. 234.
Preventoriums in Buenos Aires. A. A. Raimondi.—p. 235.
*Hemoptysis from Hypertension. R. Rossi.—p. 250.
Technic for Making Iodotannic Jelly. A. J. Bandoni.—p. 253.

Hemoptysis in Hypertension.—Rossi warns against ascribing to tuberculosis what is really a hemorrhage from hypertension. The older age, the lack of fever, the large heart, the often positive Wassermann reaction, should suggest the true and nontuberculous origin. He has never encountered chronic hypertension in a tuberculous subject. He describes a few cases of nontuberculous hemoptysis; in one it has recurred twice, relieving the woman's asthma each time. Another woman has had hemoptysis six times; in another case epistaxis and hematuria have alternated with hemoptysis, nearly daily, for six weeks. In all in this group, inoculation of guinea-pigs with the sputum was constantly negative.

Beiträge zur klinischen Chirurgie, Berlin

134: 1-152, 1925

Chronic Osteomyelitis. F. Oehlecker.—p. 1.
Typical Fractures of the Radius. A. Pörsch.—p. 53.
*Enterostomy in Peritonitis and Ileus. H. Hübener.—p. 93.
*Operative Treatment of Subcutaneous Fractures. A. Nast-Kolb.—p. 103.
Homoplastic Transplants. C. Rohde.—p. 111.
The Pathology of the Elbow Joint. S. Weil.—p. 128.
Incarceration after Gastro-Enterostomy. S. Ssokoloff.—p. 136.
Autogenous Vaccines in Surgery. E. Breitkopf.—p. 145.

Secondary Enterostomy in Peritonitis and Ileus.—In cases which show the dangerous symptoms of intestinal paralysis after operations for peritonitis or ileus, Hübener advocates the performance of a secondary enterostomy. This method of treatment was used in thirty-two patients and frequently with good results. Ill effects were never observed.

Operative Treatment of Simple Fractures.—Nast-Kolb advocates surgical treatment in recent subcutaneous fractures with the following indications: (1) in fractures involving a joint and in separation of the epiphysis; (2) in transverse fracture of the forearm or the leg, and (3) in isolated fractures of the radius or the tibia, if an attempt at conservative treatment does not seem promising after five or six days. The generally accepted indications (fractures of the patella, injuries to a nerve, etc.) are not discussed.

134: 153-318, 1925

*Tetanus and Protein Therapy. A. Buzello and K. Englmann.—p. 153.
Syphilis of the Stomach. L. Ritter.—p. 180.
Roentgen Spectrography. H. Rahm.—p. 209.
A Teratoma of the Thyroid. H. Tammann.—p. 230.
Diagnosis of Liver Tumors in Children. H. Schmidt.—p. 235.
*Sequelae of Paraffin Injections. E. Rose.—p. 244.
Early Operative Treatment of Arthritis Deformans. Läwen.—p. 265.
*Osteomalacia of Sesamoid Bone. W. Müller.—p. 308.

Experimental Studies on the Treatment of Tetanus.—Guinea-pigs received a fatal dose of tetanus toxin and were then injected with different proteins and with tetanus antitoxin. Buzello and Englmann found that the animals treated with normal human or horse serum developed only a very mild disease, and recovered. Specific tetanus antitoxin, however, is more efficient. Other nonspecific proteins only delayed the manifestation of the disease.

Sequelae of Paraffin Injections.—Rose reports the cases of three women who had received injections of paraffin into the mamma tissue for cosmetic reasons. The injections had been made twelve, eighteen and twenty years, respectively, before these patients came to his notice. One patient complained of severe pain, one of pain associated with inflammation and necrosis of the skin, and the third patient had developed an adenocarcinoma. Rose has collected a further series of similar cases from the literature, and emphasizes that paraffin injections are likely to be very harmful to the patient and that their desired cosmetic effect is usually of only short duration.

Localized Osteomalacia.—Müller observed four patients with a process of osteomalacia in the sesamoid bone of the first metatarsal bone. The roentgen-ray picture shows a spotty, irregular appearance of the bone; the patient complains of severe local pain, and there is localized edema of the subcutaneous tissue. Rest and the prevention of mechanical irritation usually cure the disease. In persistent cases extirpation may be considered.

Monatsschrift für Geb. und Gynäkologie, Berlin

70: 243-360 (Sept.) 1925

Subcutaneous Emphysema During Childbirth. W. Oppenheimer.—p. 243.
Spontaneous Rupture of Cesarean Section Scar. Müller.—p. 249.
Disinfection of the Vagina. D. v. Ott.—p. 257.
Familial Jaundice in the New-Born. F. Hilgenberg.—p. 261.
*Pathogenesis of Melena in the New-Born. J. Wieloch.—p. 269.
Isolated Tuberculosis of the Uterus. O. Gerich.—p. 278.
*Endocrine Function After the Menopause. Küstner.—p. 284.
Vaccine Therapy of Adnexitis. G. Gambarow.—p. 290.
The Results of Operations for Prolapse. H. Gänsle.—p. 295.
Adenofibrosis in Operative Abdominal Scars. W. Rosenstein.—p. 297.
Spontaneous Subsidence of Metastases After Chorio-Epithelioma. O. v. Küttner.—p. 303.
Indications for Temporary Roentgen-Ray Castration. Lüttge.—p. 306.

Pathogenesis of Melena in Infants.—Wieloch reports the case of a female infant who died under the symptoms of melena nine days after birth. Necropsy showed that an umbilical infection had resulted in thrombosis of the umbilical and portal veins.

Endocrine Condition After Roentgen-Ray Castration.—Küstner applied the Abderhalden reaction (modified by Lüttge and v. Mertz) to the serum of women in the natural meno-

pause, of women after uterus extirpation, and of women after roentgen-ray castration. He found a positive reaction with ovarian proteins only in the last group, and he concludes that roentgen-ray treatment does not simply stop the ovarian function, but induces a pathologic endocrine function of the ovaries.

Münchener medizinische Wochenschrift, Munich

72 : 1495-1542 (Sept. 4) 1925. Partial Index

*The Anatomic Basis of Angina Pectoris. Oberndorfer.—p. 1495.
Roentgen Treatment of Tuberculous Iridocyclitis. Stock.—p. 1499.
The Prescription of Glasses. W. Jablonski.—p. 1500.
Forceps Delivery in Breech Presentation. H. Seidl.—p. 1501.
Treatment of Abortion. C. Becker.—p. 1504.
*Determination of Pulse Differences. Glintschikoff.—p. 1506.
Static Disturbance of Spine with Artificial Leg. Schanz.—p. 1507.
Quantitative Determination of Defensive Ferments. A. Lahmann.—p. 1507.
The Pathology of Enteroptosis. E. Treibmann.—p. 1509.
Disinfection of the Small Intestine. L. Bogendörfer.—p. 1511
Unsuccessful Operations for Abdominal Pain. A. Müller.—p. 1516.
"Psychotherapy by Organ Specialists." R. Schindler.—p. 1517. Reply. Krecke.—p. 1518.

Pathologic Anatomic Findings in Angina Pectoris.—The clinical entity called angina pectoris must be strictly differentiated from aortalgias and from cardiac asthma. In all cases of typical angina pectoris, Oberndorfer found the anatomic manifestations of circulatory disturbances in that part of the left ventricle which receives its blood supply from the descending branch of the left coronary artery, that is, apex, septum and sometimes anterior wall. Anemic infarcts, scar formations and secondary aneurysms were found in these locations. The openings of the coronary arteries may be reduced in size by syphilitic aortitis; the coronary artery may be the site of syphilitic processes and thrombi, but cases are found in which no such vascular pathology explains the degenerative changes in the heart musculature. This suggests the possibility that the vascular changes are sometimes only secondary to irregularities in the vascular nervous supply and that severe but temporary spasms of the artery may lead to anemic infarcts. Anatomic changes in the ganglion cells, connected with the innervation of the cardiac vessels, are as yet unknown, but may possibly be the primary cause of angina pectoris.

Difference of the Pulse in the Right and Left Wrist.—Glintschikoff observed that the phenomenon is more frequently and more easily noticed, if the two pulses are taken while the patient keeps his arms elevated.

Wiener klinische Wochenschrift, Vienna

38 : 977-1002 (Sept. 3) 1925

Sympathetic Nervous System and Heterochromia. W. Gilbert.—p. 977.
The Significance of Sacrocoxitis. R. Joachimovits.—p. 978.
*Resorption in Subcutaneous Tissue. F. Donath and B. Tanne.—p. 983.
*Rheumatism and Cutaneous Vaccination. G. Paul.—p. 984.
Spasms of the Neck Musculature. J. Rothfeld.—p. 988.
Pseudosclerosis. L. Dimitz and V. Vujič.—p. 991. Conc'n.
Orthopedics. H. Gocht.—p. 995.

How to Measure the Resorption from the Subcutaneous Tissue.—Donath and Tanne advocate for this purpose the subcutaneous injection of fluorescein-sodium because it is easily detected in the blood serum even in minute amounts. In order to exclude the factor of accumulation in liver and spleen, the injection is given near the wrist, and the blood is withdrawn from the ulnar vein on the same side.

Ponndorf Vaccination.—Paul treated 342 patients with arthritis deformans, chronic rheumatism, neuralgia, etc., according to Ponndorf's method, and obtained perfect cures in 64 per cent. and noticeable improvement in 30 per cent. of his patients.

Zeitschrift für Urologie, Leipzig

19 : 641-720, 1925

Surgical Treatment of Nephritis. M. Zondek.—p. 643.
*Disinfection of the Kidney Tissue. P. Rosenstein.—p. 656.
Illuminating Instruments. Haebler.—p. 668.
Substandard Urogenital Development. Orlowski.—p. 673.
Case of Double Ureter. J. Minder.—p. 680.
Case of Bilateral Hematuric Hydronephrosis. Nicolich.—p. 684.
Kidney Surgery. Kott.—p. 686.
*Nephritis Dolorosa. C. Schneider.—p. 700.

Disinfection of Kidney Tissue.—Rosenstein attempted a disinfection of infected kidneys in the following way: The kidney was first decapsulated; then, with a pointed cautery ten or twelve fine holes were made deep into the renal tissue, and the disinfecting fluid (Rivanol) was injected through a long and fine needle into the pelvis. After a certain pressure is reached, the fluid exudes through the cautery puncture holes. The author has treated four patients in this way, and believes that the procedure is harmless, and may save kidneys which otherwise would have to be removed.

Nephritis Dolorosa.—Schneider discusses in detail the clinical picture of this disease, and reviews the different opinions on the genesis of the characteristic attacks of pain.

Vestnik Mikrobiologii i Epidemiologii, Saratov

4 : 1-94, 1925. Partial Index

Contradictory Results of Oral Immunization. E. Korobkova.—p. 30.
*Vaccine Skin Reaction in Scarlet Fever. A. Sheltenkoff.—p. 34.
Modified Romanowsky Stain for Plasmodia. S. Moshkovsky.—p. 46.
*Bactericidal Property of Serums. A. Tseitlin.—p. 51.
Method for Staining Negri bodies in Rabies. E. Turevitch.—p. 71.

Vaccine Skin Test in Diagnosis and Prognosis of Scarlet Fever.—Sheltenkoff prepared a polyvalent vaccine with streptococci from throat, blood, ear, mastoid process, pleura and kidney of scarlet fever patients. The vaccine contained 100 millions of bacilli in 1 c.c. He injected subcutaneously 120 scarlet fever patients with from 0.1 to 0.5 c.c. of the vaccine, or with 0.1 to 0.2 c.c. intradermally. There was no local reaction in the first five days of the disease in any instance, but a local reaction usually developed by the fifteenth or twentieth day, and persisted much longer in grave cases with complications. The same injections in twenty-eight healthy children, aged from 6 to 15, induced a positive skin reaction the next day in 65 per cent. In twenty-two children, of the same age, mostly with eruptive diseases, other than scarlet fever, the reaction was positive the next day in 27 per cent. The prognosis was favorable with a positive reaction occurring during complications. He says that a negative reaction has no diagnostic import since it occurs also in other diseases; but a positive reaction, appearing in the first five days, positively excludes scarlet fever. The reaction was always positive in convalescents. Except slight headache in a few cases, no general reaction was noted with 700 intradermal injections of 0.1 or 0.2 c.c. of the vaccine.

Bactericidal Property of Serum from Man and Animals.—Tseitlin added to 0.5 c.c. of normal serum, active or inactive, 1 drop of a culture of bacteria diluted to 1 per thousand. Horse and rabbit serum displayed a notable ability to destroy the bacilli of anthrax and diphtheria, and a slight potency for typhoid bacilli. Sodium chlorid and bismuth subnitrate enhanced the bactericidal property of the serums still more. The serum from persons with a typhoid or typhus history also proved bactericidal. Goose serum presented considerable bactericidal power for the bacilli of anthrax and diphtheria; pigeon serum only when mixed with bismuth.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2 : 905-992 (Aug. 22) 1925

*Speech After Laryngectomy. H. Burger and L. Kaiser.—p. 906
*Intra-Ocular Pressure in Diabetics. E. Marx.—p. 918.
*Anatomic Findings in Mongolian Idiocy. A. Gans.—p. 922.
*Sanocrysin. H. Møllgaard.—p. 926.
Alleged Efficacy of Formic Acid in Therapeutics. Van Dam.—p. 942,

The Speech After Laryngectomy.—Burger and Kaiser analyze the phonetic conditions in a man whose larynx was removed on account of cancer three years before. His speech is so good that it does not interfere with his official telephoning from Amsterdam to Munich in reporting races, etc. The speech is closer to normal when his stomach is full. He wears the cannula only daytimes; it is hidden by his beard.

The Intra-Ocular Pressure in Diabetics.—Marx states that no change in the intra-ocular pressure could be discovered in two of five patients under insulin treatment, while in the others the pressure rose. There was no rise in two diabetics after ingestion of the 50 gm. of glucose which had rapidly increased the sugar content of the blood. He urges others to continue this research, examining the intra-ocular pressure

at the same time the glycemia is recorded. There did not seem to be actual parallelism between them, but the general trend seemed to be the same.

The Anatomic Findings in Mongoloid Idiocy.—Gans says that he has found up to eighty different kinds of malformation in cadavers of mongoloid idiots. The brains show the brachycephaly formation of the Chinese brains examined by Kappers, only in a more pronounced form—"more Mongolian than the Chinese." The weight of the cerebellum was always subnormal, and a bunch of nerve tissue—grey matter—was found on the median side of the flocculus. This *tuber flocculi* has been described by others as heterotopia in the cerebellum. It has been noted in congenital myoclonia, and something of the kind was evident in a chimpanzee and an orang-outang Gans examined.

Present Status of Sanocrysin Treatment.—Møllgaard presented this report at a meeting of the Utrecht branch of the Netherlands Medical Association. He reiterated that this method of treatment is an attempt to produce a chemotherapy in the Ehrlich sense, and that it is only a beginning. But it is yielding good results in many cases, and exactly in those cases in which other methods of treatment fail. The present technic has materially reduced its dangers. The rapidity with which improvement follows is a special feature of the method. Distinct improvement has been observed in 52 per cent. of the 254 cases treated in the sanatoriums of Denmark to date, but comparatively few of the patients completed the full six months' course. The percentage is 83 in those that completed the course. The danger of shock has been reduced by waiting until the febrile reaction from one dose has entirely subsided before giving another. Another point is to wait for four days when no reaction is apparent, as delayed reactions have been observed, and this brought the reaction fever into conflict with the new dose. Albuminuria as an element in the febrile reaction is transient and harmless, but albuminuria later is regarded as a contraindication for the drug until the urine is normal again. The doses have been much reduced since the first. One group of internists give 0.5 to 1 gm. at six day intervals; another group, 0.05 to 0.25 with four day intervals. Albuminuria has become much rarer with these methods, which seem to give about equal results. In moderately severe and light cases, sanocrysin treatment may be regarded as relatively harmless, but there will always be danger in the very grave cases with high fever until an antiserum can be produced that will control the acute intoxication.

Norsk Magazin for Lægevidenskaben, Oslo

86 : 917-1044 (Sept.) 1925

*Tuberculosis of the Skin. E. Bruusgaard.—p. 917.
Senile Cataract and Senile Macula Changes. H. G. A. Gjessing.—p. 951.
*Poliomyelitis with Polyarthritis. Haakon Sæthre.—p. 966.
Seven Months' Fetus Carried Twenty-Four Years. H. Natvig.—p. 974.
Deformity of Heads of Twins from Mutual Pressure. Natvig.—p. 982.
Technic for Operation in Glaucoma. S. Holth.—p. 990.
*The Tonsils in Rheumatism. Reidar Gording.—p. 995.

Tuberculosis of the Skin.—Bruusgaard remarks that the swelling of glands back of the primary lesion usually gives the first clue to its tuberculous nature. The swollen glands are hard and movable at first, but they soon become soldered to their surroundings, and perilymphadenitis with proliferation of connective tissue develops in the depths. This differentiates it from a syphilitic lesion. He gives an illustrated description of several personal instances of primary tuberculous skin lesions in children. The course seems to be milder when the skin lesions are prominent. In these cases the skin may take an active part in the immunization process. He argues that tuberculosis passes through three stages the same as syphilis, but differs from the latter in its receptivity for repeated infection. Flaring up of old infection is more common, however, in which again it resembles syphilis. Protracted serial study of the skin manifestations of tuberculosis, in connection with simultaneous biologic immunity tests, he thinks will throw much light on tuberculosis in time.

Acute Poliomyelitis with Polyarthritis.—The girl, aged 16, developed multiple painful joint affections along with the peripheral paralysis. The polyarthritis improved under salicylates and disappeared the tenth week, but the spontaneous pains persisted for seven months, agonizing at times. The paralysis has persisted practically unmodified.

Rheumatism and the Tonsils.—Gording reports clinical and experimental research on 260 cases of joint and muscular rheumatism, all but 25 per cent. in women. A history of tonsillitis was known in only thirty of the 108 cases of primary chronic polyarthritis, and in thirty-four of the 107 muscular and nervous rheumatism cases. The average age at the onset in the tonsillitis cases in both groups was 27, and in the nontonsil cases 43 and 44. In the thirty-four cases treated with tonsillectomy, improvement followed in twenty-two but not in the others.

Ugeskrift for Læger, Copenhagen

87 : 709-724 (Aug. 13) 1925

*The Spinal Fluid in Sciatica. A. V. Neel.—p. 709.
*Tubercle Bacilli in the Spinal Fluid. K. A. Jensen.—p. 710.
Acute Leukemia in Young Woman. R. Thede.—p. 711.

The Spinal Fluid in Sciatica.—Neel declares that lumbar puncture is indispensable for a complete study of the etiology of sciatica. The findings were more or less pathologic in the eighteen cases he describes, but three of the patients had a history of syphilis.

Tubercle Bacilli in the Spinal Fluid.—Jensen obtained positive cultures with Petroff's medium in fifteen of twenty-two cases of tuberculous meningitis. It required only from ten to thirty-six days in fourteen of the cases. He prefers Bender's picric acid modification to the original Ziehl-Neelsen staining method. It materially shortens the time required for the microscope.

87 : 775-790 (Sept. 3) 1925

*Medical Treatment of Glaucoma. H. Larsen.—p. 775.
*Cancer or Tuberculosis. C. Gram.—p. 782.
*Changes in the Clinical Picture of Alcoholism. A. Wimmer.—p. 784.

Medical Treatment of Glaucoma.—This is Larsen's lecture in competition for the chair of ophthalmology. He says of subconjunctival injection of epinephrin—which Hamburger has found effectual in reducing the intra-ocular pressure to an extent that renders it amenable to miotics afterward—that it is still in the tentative stage, as likewise dry sodium chlorid by the mouth or vein. The reliance is still on miotics, but he reiterates that it is not enough to order the proper treatment; the important point is to see that the treatment is properly applied for as long as needed. This is particularly difficult when daily instillations have to be kept up for years, as the disturbances progress so insidiously in glaucoma. But conservative treatment is regaining ground more and more. Bright light and reading fine print aid in reducing glaucoma; conditions dilating the pupil should be avoided. Larsen has one patient who has had glaucoma in one eye for nine years. During the last seven he has had 2 per cent. pilocarpin instilled three times a day, and the tension keeps 26 mm., vision 6:6, although the disk shows some cupping. Van der Hoeve's patient was kept with normal vision in this way for fifteen years.

Cancer or Tuberculosis?—A previously robust man of 43 had a supposed primary tuberculous process in the testis removed. Three months later symptoms suggesting a spinal cord tumor or syringomyelia developed, and necropsy revealed numerous metastases from the primary lesion in the testis. No trace of tuberculosis was found. The main symptoms were from a large metastatic tumor in the sacrum.

Alcoholism in Copenhagen.—Wimmer brings statistics down to date. He ascribes the lower number of cases of delirium tremens to the high price of liquor under the 1917 law. From 321 cases in 1910, it dropped to twenty-four in 1923. The reduction is entirely in the group of casual drinkers. The cases of alcoholism now are mainly in persons with psychopathic degeneration, the feebleminded and epileptics, and the chronic habitual drinkers. This change in the character of the cases of alcoholism in institutions, since antialcohol legislation, is evident in France and Germany as well as in Denmark, he says. Total prohibition would not make the degenerates normal, and he thinks it is preposterous to inflict total prohibition on the entire populace merely to benefit the comparatively few chronic habitual drinkers.